

**A CRITICAL EXAMINATION OF ALTERNATIVE DISPUTE
RESOLUTION IN PUBLIC-PRIVATE PARTNERSHIPS**

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A dissertation submitted in partial fulfillment of the requirements for the
degree of

Doctor of Philosophy

University of Washington

2026

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Program authorized to offer degree:

Built Environments

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Abstract

A critical examination of alternative dispute resolution in public-private partnerships

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Disputes in design-build-finance-operate-maintain (DBFOM) public-private partnership (P3) infrastructure concessions are structurally inevitable — driven by the model’s long duration, complex risk allocation, and financial interdependencies. Alternative dispute resolution (ADR) mechanisms are now standard in P3 contracts, yet significant inconsistency remains in how these provisions are designed, sequenced, and enforced across jurisdictions. No comprehensive, evidence-based ADR framework tailored to the contractual and operational environment of DBFOM concessions existed prior to this research.

This dissertation addresses that gap using a three-phase mixed-methods approach. The first phase involves a systematic literature review following the PRISMA framework, analyzing 75 peer-reviewed articles published from 1990 to 2023. This review traces the evolution of ADR scholarship from arbitration-focused practices to multi-tiered, hybrid models and highlights the lack of cross-jurisdictional empirical research as the main gap. The second phase is a documentary case study of

twenty DBFOM highway P3 contracts, ten from the United States and ten from Canada, performing a clause-level comparative analysis. This reveals clear jurisdictional differences: Canadian provincial frameworks follow standardized, prescriptive multi-tier ADR sequences, whereas U.S. contracts show state-level fragmentation due to institutional delegation and statutory variation. The third phase involves a qualitative thematic analysis of sixteen semi-structured interviews with construction attorneys, dispute board members, mediators, arbitrators, owner's advisors, and technical consultants, resulting in ten themes and thirty codes. Key findings include strong practitioner support for multi-tiered ADR, a shift in perception of Dispute Review Boards from tools for dispute resolution to dispute prevention, and recognition of senior executive escalation as the most crucial resolution level across roles. Additionally, two structural gaps are identified: first, flow-down of ADR provisions at the concessionaire-to-design-builder interface; second, dispute-resolution mechanisms during the operations phase in DBFOM contracts.

The three evidence streams come together in a detailed six-tier ADR framework—Steps 0 to 5—featuring eight practice-based refinements, a final tier adaptable to different jurisdictions, an ADR annex for the operations phase, and model flow-down clauses for the design-build subcontract. This framework is ready for immediate use in North American DBFOM concession agreements and provides guidance for public agencies, concessionaires, and legal teams aiming to enhance dispute management throughout the entire concession lifecycle.

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Acknowledgements

This dissertation could not have been completed without the continuous guidance, helpful insights, and both professional and personal support from everyone who contributed to its development.

I am deeply grateful to my dissertation chair, Dr. Ahmed Abdel Aziz, whose steadfast commitment to this work has endured from our initial discussion of dispute resolution in P3 contracts through the final framework revision. His patience with ambiguity in the early phases and his precision in the later ones made this a better dissertation and me a better researcher.

I sincerely thank my doctoral committee members, Dr. Carrie Sturts Dossick, Dr. Giovanni Migliaccio, and Dr. Rachel Fyall, for their involvement, constructive challenges, and support throughout this work. Their combined guidance has provided me with a depth of perspective I did not anticipate at the beginning, and I cannot now imagine this dissertation without it. I also extend my gratitude to all the professors and staff in the construction management department and the College of Built Environments who supported me along this journey.

Special thanks go to the industry practitioners who contributed to the development of the 3rd phase by generously sharing their time and expertise. Their openness and active participation highlight their commitment to advancing the field of construction dispute resolution.

To all my friends, colleagues, and fellow PhD scholars, I thank you for the many days and nights spent researching, collaborating, and making this experience as meaningful as it has been.

To my family, I am grateful for your belief in me. I especially want to thank my wife, Beatrice Nyambura Kanyago, for her steadfast love, support, and encouragement along this entire journey. Lastly, I give thanks to God for His endless love and grace.

CHAPTER 1 INTRODUCTION

Public-Private Partnerships (P3s) have emerged as a leading contracting method for delivering public services and infrastructure worldwide. According to the Build America Bureau, public-private partnerships (P3s) in the transportation sector are contractual agreements between a public agency and a private entity. This agreement allows the private sector to assume additional risks, including design, construction, financing, long-term operations, and traffic revenue (Build America Bureau, 2021). By leveraging the private sector, governments can deliver and support complex public projects with their capital, efficiency, and innovation.

In recent years, P3s have become a cornerstone of modern governance, utilized to address infrastructure and service delivery needs. However, the inherent complexities and high financial stakes involved often lead to disputes among stakeholders. These disputes result in delays and lengthy litigation, which are costly for all parties involved in the construction process. As the complexity and scale of construction projects increase, so does the likelihood of disputes.

When disputes arise, especially in P3 projects, either the private parties or the public entity may find the other at fault. However, because these projects are developed with shared responsibility, there is often shared responsibility for these disputes (Kilian & Gibson, 2005). Traditionally, when these parties failed to resolve these details, it led to litigation. According to Treacy, contract disputes adjudicated through litigation tend to be longer and more complex than civil cases, which can take 7 to 14 months to adjudicate (Treacy, 1995). This wait also significantly increases the litigation process's cost implications. Over the years, there has been a push to have more of these cases adjudicated through various Alternative Dispute Resolution (ADR) processes.

There is a rich history of ADR methods being used in various construction projects. However, a preliminary review shows limited discussion of these methods in the context of P3 projects, despite their steady increase in use.

CHAPTER 2 LITERATURE REVIEW

Like all other sectors, the construction industry has experienced its fair share of disputes throughout history that have affected the success of specific projects, often increasing costs or delaying completion. Additionally, the lack of clear dispute-resolution mechanisms has threatened the industry, with many disputes remaining unresolved, underscoring the need for quick, effective mechanisms embedded in contracts that comply with regulatory requirements. The literature review explores global issues faced by the construction sector, drawing on scholarly articles, and investigates potential ways to resolve these disputes efficiently and amicably. and amicably.

2.1 Definition of P3 Projects and Alternative Dispute Resolution in P3 Projects

Public-private partnerships (P3s) are an effective approach to building public infrastructure and delivering social services by combining assets from both the government and the private sector. These collaborations aim to create innovative, efficient solutions that address community needs while leveraging private-sector resources (World Bank Group, 2023).

Alternative Dispute Resolution (ADR) comprises various methods for resolving conflicts without resorting to trials or violence. Examples include settlement conferences, arbitration, mediation, and consensus building, among other ADR practices (Global Infrastructure Hub, 2024).

2.2 Defining Conflicts, Claims, and Disputes

While the terms conflict, claim, and dispute are often used interchangeably in everyday and professional contexts, they have distinct meanings in construction law and dispute resolution. They

represent different stages in a progression, not synonyms (Kumaraswamy, 1997; Fenn et al., 1997; Gebken, 2006). This study follows the established taxonomy, which views these terms as points along a continuum from underlying interests' incompatibility to formal, legally enforceable issues requiring resolution. Recognizing these differences is crucial because the framework developed here addresses various points along that continuum: dispute prevention occurs at the conflict stage, while the multi-tiered ADR process targets claims and disputes.

2.2.1 The escalation relationship

Kumaraswamy (1997) portrays the relationship as a progression where a claim acts as a mediator between conflict and dispute: unresolved latent conflict may lead to a claim, and if that claim is rejected and the rejection is not accepted, it can solidify into a dispute. Figure X illustrates this progression.

Table 1 The conflict–claim–dispute escalation continuum (after Kumaraswamy, 1997; Fenn et al., 1997)

CONFLICT	→	CLAIM	→	DISPUTE
<i>Incompatibility of interests (inevitable; can be managed)</i>		<i>Formal assertion of entitlement (money, time, relief)</i>		<i>Rejected claim, rejection not accepted (justiciable; needs resolution)</i>

2.2.2 Formal definitions adopted in this study

Conflict arises whenever parties have incompatible interests. It is a common and often unavoidable part of any project relationship, but it can be managed effectively. Proper management can prevent conflicts from escalating into disputes (Fenn et al., 1997; Kumaraswamy, 1997). Importantly, conflict does not always involve formal claims and is not inherently justiciable.

A claim is a specific assertion or request made by one party, typically seeking additional payment, a time extension, or other relief related to the contract or project events (Kumaraswamy, 1997; Bunni, 2013). Within the escalation process, a claim acts as a bridge between conflict and

dispute: it formalizes a conflict into a clear demand. Importantly, a claim alone does not constitute a dispute.

A dispute occurs when one party's claim or assertion is rejected by the other, and the first party does not accept this rejection (Kumaraswamy, 1997, citing the ICE Arbitration Procedure; Fenn et al., 1997). It involves clear, legally actionable issues, disrupts the project's goals of timely completion, cost management, and quality, and requires resolution—often through third-party intervention if direct negotiations fail. This term best describes the purpose of alternative dispute resolution (ADR) mechanisms.

Disagreement refers to an informal difference of opinion or stance between parties. It is not a formal term within the construction-dispute taxonomy and exists at the earliest, pre-formal stage, often overlapping with latent conflict. Due to its vagueness, this study uses the term sparingly and does not equate it with "dispute."

2.3 The Nature and Causes of Disputes in Construction Projects

According to Sharma and Swain (2011), risks are unavoidable in every complex construction project, no matter the delivery method. The researchers aimed to identify and categorize different types of risks and suggest effective ways to reduce them. Sharma and Swain (2011) found that risks could be divided into seven categories: political, legal-contractual, design, financial, environmental, physical, and construction. Physical risks included acts of nature and unexpected events, while construction risks included delays in site access, possible equipment failures, and a lack of necessary equipment. Finally, political risks included changes in regulations, war, civil unrest, labor shortages, customs and export restrictions, and local labor quotas, all of which affect the timing and delivery of the final product. Sharma and Swain (2011) argued that proper risk management preparation can be the key to a project's success or failure.

Public-private partnerships have been widely recognized as vital for delivering public infrastructure. According to Shabana and Gad (2023), there has been a significant increase in alternative contracting methods for successfully implementing specific projects. P3s enable governments to leverage private-sector efficiency and innovation while addressing public-sector funding constraints(Yescombe, 2007).

The advantages associated with PPP, such as the transfer of design and private financing, have contributed to its widespread use over the years. However, P3 projects, given their long-term nature and complex contractual frameworks, are prone to disputes. Grimsey and Lewis discuss the impact of disputes on project costs and schedules, emphasizing the need for effective dispute-resolution mechanisms(Grimsey & Lewis, 2005). Shabana and Gad (2023) sought to improve the drafting of P3 projects by allocating risks, identifying the leading causes of disputes and claims in these projects, and outlining recommendations to mitigate these risks. Similar to findings by Jones (2006), the researchers conducted a case study that revealed the significant causes of claims and disputes in the industry included right-of-way availability, utility relocations, government approvals, staffing, and varying site conditions (K.S & G, 2013). Ultimately, the research showed that using an alternative resolution is recommended to address these issues. Nguyen et al. further analyze the risk-sharing mechanism inherent in P3 projects, noting that effective risk allocation is crucial for the success of these partnerships (Nguyen Duc A. et al., 2018).

2.4 Alternative Dispute Resolution Mechanisms in P3 and Construction Projects

In their research, Abdul-Malak and Senan (2020) argued that today's construction contract conditions for disputes and claims should be designed using a multistep approach. The researchers presented a case for adjudication as an essential alternative dispute resolution mechanism, including a comprehensive review of its need in standard contract forms. They also analyzed past adjudication outcomes in the United Kingdom, finding that implementing the ADR technique was

effective and widely accepted. Abdul-Malak and Senan (2020) found that factors such as membership on adjudication boards, the timing of adjudication referrals, and the steps and procedures used during adjudication are crucial to its success. Their findings suggest that adopting this approach reduces disputes among parties in the construction sector, as emphasized by Fenn & O'Shea (2008).

Mediation is also recognized as a favorable ADR method in P3 contracts because of its flexibility and ability to preserve business relationships. Mwakapala and Sun provide a comprehensive guide on incorporating mediation into P3 agreements to enhance dispute resolution effectiveness. Similarly, Brown and Marriott emphasize the benefits of mediation over litigation in infrastructure projects, especially in maintaining confidentiality and controlling outcomes.

Sinha and Jha (2020) aimed to explore the disputes related to PPP in India. The researchers noted that these projects have faced major setbacks due to cost issues and delays, often caused by land acquisition disputes, environmental permits, and forest clearance issues, among other approval hurdles. Sinha and Jha (2020) further explain that although the Concession Agreements (C.A.) include dispute-resolution clauses, resolving disputes remains difficult unless all stages of litigation are completed. Essentially, the C.A. resolution clauses are viewed as the last resort, limiting their use and acceptance. Sinha and Jha (2020) therefore recommend that reforms in land acquisition laws and legislation, along with strict and timely implementation, and fair compensation for those affected, could be crucial in reducing litigation. Ultimately, Sinha and Jha (2020) argue that incentives and penalties are necessary to ensure strict adherence to existing provisions within P3 contracts.

According to Akintoye et al. (2015), the construction industry in the United Kingdom often faces challenges such as payment delays, low profit margins, and cash flow issues. These unfair payment practices have led to an increase in claims and disputes, underscoring the need for

alternative dispute-resolution mechanisms such as adjudication. Akintoye et al. (2015) point out that the creation of the U.K. Housing Grants, Construction and Regeneration Act of 1996 has both strengths and weaknesses, such as a high level of awareness that may support its implementation, as well as the necessity for several amendments to improve its efficiency and productivity in the UK (Musenero et al., 2023). The researchers also found that amending the Act has resulted in various benefits, including faster dispute resolution, quicker claim handling, and a better overall working environment for the sector.

Tayeh et al. (2022) explored the complex, hierarchical structure of construction projects, which has increased dispute severity even when project success depends on coordinated efforts among all team members. Their study aimed to identify various biases, understand their motives, and find ways to reduce bias in Gaza's construction sector, using a descriptive-analytical approach. They discovered that multiple biases exist in dispute resolution, and early identification can facilitate intervention and promote timely resolutions. Ultimately, they argued that improving dispute resolution processes could help reduce bias, emphasizing the important role of arbitrators as key figures in resolving disputes, as also noted by Martin & Thompson (2011).

In their research, Hietanen-Kunwald and Haapio (2021) identified proactive contract design as an effective means of resolving disputes in the construction industry. The researchers argued that the costs of preventing and resolving disputes are much lower than those associated with the entire litigation and arbitration process. Accordingly, Hietanen-Kunwald and Haapio (2021) showed that viewing contracts solely as legal documents is too limited. Therefore, proactively using contracts increases the likelihood of success for all parties involved and decreases the chance of unwanted issues arising. Hietanen-Kunwald and Haapio (2021) highlighted the importance of well-structured contracting processes and clear documentation to prevent disputes and facilitate quick intervention, reducing the need for dispute resolution. Essentially, methods like mediation were found to be

helpful in de-escalating disputes, with an emphasis on the key processes within the contracts as essential tools for managing claims and disputes.

The figure below shows a spectrum of dispute resolution methods, highlighting how costs and hostilities tend to increase as the process moves away from the parties' control (Richter 2000; Gebken 2006). Methods that allow disputing parties to retain control typically result in lower costs and less hostilities. In contrast, resolving disputes through third-party decisions, such as litigation or binding arbitration, generally leads to higher costs and greater hostility.

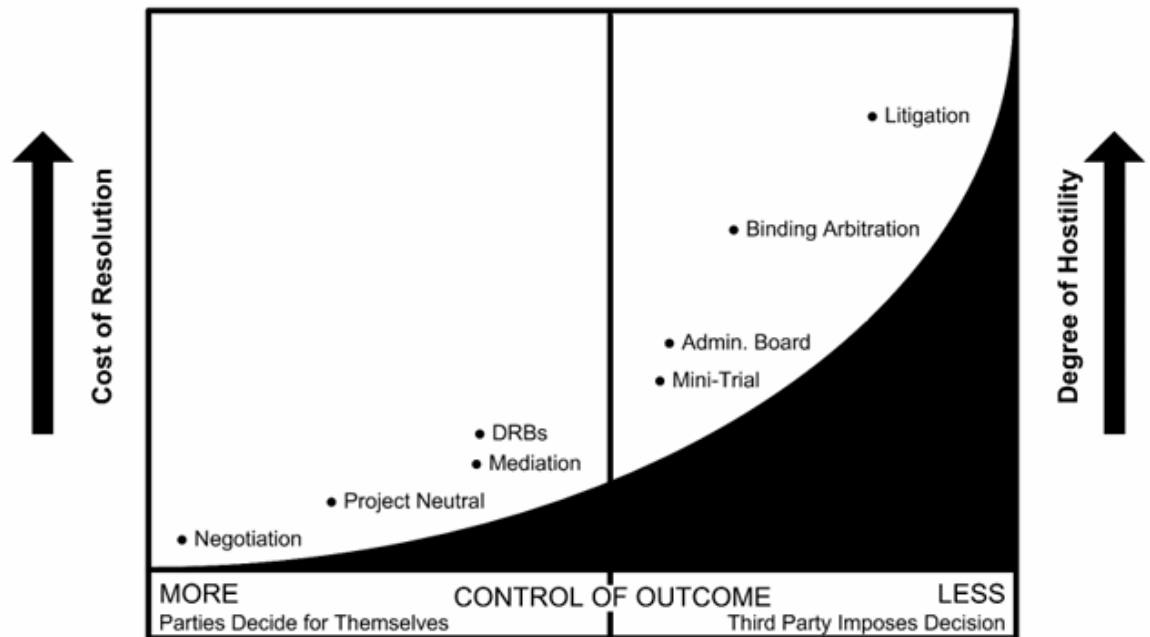


Figure 1 Control of Outcome vs. Cost and Hostility of Dispute (Adapted from Richter 2000)

2.5 The Role and Impact of ADR in P3 Projects

Previous studies and practical cases highlight the key role of ADR in resolving disputes effectively in P3 projects. For example, in 2010, the Mexican Senate approved a national P3 framework through a P3 bill, which included a dispute-resolution clause advocating commercial arbitration (Levy, 2011). Similarly, the Confederation Bridge project between Prince Edward Island

and New Brunswick, Canada, effectively used a dispute resolution board (DRB) to address disputes quickly, reducing project delays and improving collaboration (Harvey, 2013). Additionally, research shows that projects with structured ADR processes, such as DRBs and mediation, tend to face fewer long-lasting disputes and lower overall project costs (Cheung & Pang, 2013). These successes highlight the need for further research into ADR strategies in P3 settings, which supports this study's goal of developing a robust and practical ADR framework.

2.6 Alternative Dispute Resolution in Federal Highway Administration (FHWA) P3 Projects

2.6.1 Reasons for Dispute Resolution Clauses in FHWA Construction Projects

Contracts issued by the Federal Highway Administration (FHWA) often include dispute-resolution procedures designed to minimize legal disputes over technical issues or contract interpretation (Geva-May et al., 2021). These agreements also contain several clauses that specify conditions likely to lead to disputes, often due to non-conformance. The FHWA explains that "ADR is a collaborative, consensual dispute resolution approach that includes mediation, facilitation, conciliation, fact-finding, mini-trials, negotiation, negotiated rulemaking, neutral evaluation, policy dialogues, use of ombuds, arbitration, and other processes that typically involve a neutral third party who assists the parties in preventing, minimizing the escalation of, and resolving disputes." (Federal Highway Administration, 2024).

According to the FHWA, P3 contracts usually include alternative dispute resolution processes for a variety of reasons, such as the time constraints associated with numerous P3 projects and the expeditious benefits of these processes outside the court system. Expert arbitrators or mediators, chosen for their sector understanding, will seek settlement through a collaborative, non-adversarial procedure (Galvin et al., 2021). An additional advantage of alternative dispute resolution processes for P3 contracts is that the government agency cannot be sued even if it

breaches the contract. This "autonomous immunity" can prevent the private sector from funding a project unless the government entity waives it in favor of contractually agreed alternative dispute settlement processes (Global Infrastructure Hub, 2024).

2.6.2 Alternative Dispute Resolution Processes in FHWA Construction Projects

Before engaging in mediation or arbitration, dispute resolution processes often employ structured mechanisms to identify and resolve issues through negotiation, encouraging early settlement. For instance, the contract may specify a timeframe within which the parties must resolve their differences before involving their managers. Often, parties are required to send a letter to their supervisors detailing the dispute and the steps taken to resolve it. This approach aims to motivate stakeholders to seek a prompt resolution to disputes.

Besides the FHWA, the European Bank for Reconstruction and Development (EBRD) has highlighted the importance of including ADR clauses in P3 contracts. The EBRD, along with the World Bank and FHWA, strongly recommends consulting legal experts to ensure the contract terms are appropriate and applicable in the relevant Commonwealth of Independent States (CIS) countries (EBRD, 2013). The dispute resolution process may also need to comply with agreements specific to CIS member nations, such as investor-state dispute settlement agreements. These requirements should be identified during the project's contractual due diligence. Ultimately, having a thorough dispute resolution process is essential for the effective management of a PPP contract (EBRD, 2013).

2.7 ADR in P3 Transportation Construction Projects Contracts

2.7.1 Definition of ADR and ADR Processes in P3 Transportation Construction Projects

The National Cooperative Highway Research Program states that ADR processes in P3 projects encompass negotiation, facilitation, mediation, and evaluation techniques to resolve disputes rather than traditional adjudication, such as court cases and administrative procedures

(Transportation Research Board & National Academies of Sciences, Engineering, and Medicine, 2008). Most ADR methods are voluntary and aim for an agreement or mutual understanding. Some specialists also incorporate direct communication methods such as dialogue and negotiation (Transportation Research Board & National Academies of Sciences, Engineering, and Medicine, 2008).

ADR neutrals support negotiations through facilitation and mediation. Other litigation-focused ADR methods, like early neutral evaluation (ENE) and mini-trials, are more structured and often involve a neutral with specialized knowledge (Hoffman & Hwang, 2020). Arbitration is an ADR process where a neutral examines the facts and offers an opinion, which can be either binding or nonbinding (Transportation Research Board & National Academies of Sciences, Engineering, and Medicine, 2008).

A 2024 study by the National Cooperative Highway Research Program shows that the construction industry has been exploring new methods to manage contractor disputes and lower litigation for many years. Common alternative dispute resolution (ADR) techniques in construction contracts include direct negotiations at the project and senior management levels, as well as involving third-party mediators when internal negotiations fail. Arbitration is also a common solution for unresolved disputes. State Departments of Transportation (DOTs) often adopt issue resolution ladders, collaborative strategies, and mediation to address contractor issues (U.S. Department of Transportation, 2016). They also established dispute review boards (DRBs), which are neutral, experienced third parties that offer non-binding recommendations on project-related disputes. These DRBs first emerged in the U.S. in the late 1970s to resolve disputes over transportation tunneling projects.

2.7.2 ADR Processes in the Department of Transportation Projects

According to the Department of Transportation (DOT), the Concession Agreement includes mechanisms for resolving issues between the Developer and the Department, such as claims, disagreements, and disputes over acts, rights, and obligations (U.S. Department of Transportation, 2016). If a dispute remains unresolved within the specified timeframe, the parties can begin formal negotiations. If mediation fails, non-binding mediation might be attempted, and if the dispute continues, litigation can ensue (Pou et al., 2008). Usually, each party bears its own costs during the dispute resolution process (Westerwinter, 2021). If mediation does not succeed, an independent panel of experts may be convened to review the dispute before proceeding to a lawsuit. However, binding arbitration may not always be available (U.S. Department of Transportation, 2016).

2.7.3 Disputes in DOT P3 Projects

P3 projects within DOT face additional challenges because contractors are required to submit lump-sum bids based on the DOT's 30% design. They also assume substantial responsibility and risk regarding governmental approvals, right-of-way acquisition, and utility relocation (Johnson & Erickson, 2012). While direct costs can be substantial, delays, disruptions, and inefficiencies often have a greater impact. Delays tend to be the most contentious and costly, as seen in the \$4 billion Mario M. Cuomo Bridge project, which is currently involved in a lawsuit with the New York City Bridge Commission, seeking about \$1 billion in compensation through various claim theories (Nancy Smith et al., 2019).

2.7.3.1 Negotiation

Negotiation is the simplest and most widely used method. It involves the parties (or their representatives) communicating directly to resolve their dispute without a third-party neutral. It is entirely voluntary and non-binding until an agreement is reached, and it underpins almost every

other ADR process, many of which are essentially structured or assisted forms of negotiation (Cheung et al., 2008). Because there is no outside decision-maker, the parties retain complete control over both process and outcome.

2.7.3.2 Mediation

Mediation is a dispute resolution process in which a neutral third party helps parties communicate, identifies core issues and interests, and suggests settlement options (Johnson & Erickson, 2012). The mediator has no personal stake in the outcome and cannot impose decisions on either side. Usually part of the settlement process under state law, mediation communications are confidential (Sarmiento & Renneboog, 2021). Some DOTs require mediation before formal dispute resolution, while others see it as optional (Smith, 2020). Maine DOT's Standard Specifications state that parties may agree in writing to any dispute-resolution method, including mediation, without providing detailed reasons (Geva-May et al., 2021). The Colorado DOT's Standard Specifications state that non-binding alternative dispute resolution methods, such as mediation, are available upon mutual agreement (U.S. Department of Transportation, 2016). Most DOTs make mediation dependent on mutual agreement; however, the Arizona DOT allows contractors to request mediation before proceeding to arbitration or litigation.

2.7.3.3 Conciliation

Conciliation is a consensual, facilitative process in which a neutral third party, the conciliator, helps disputing parties narrow their differences and reach a settlement. The International Labor Organization describes it as using a neutral to reduce differences and find an amicable solution (*Recommendation R092 - Voluntary Conciliation and Arbitration Recommendation, 1951 (No. 92)*, 1951). It differs from mediation through the conciliator's more interventionist approach: they may consider each party's position, offer opinions, and suggest fair

settlement terms, but these are not imposed and depend on the parties' agreement. The process is non-binding; settlements must be in writing to be legally effective.

2.7.3.4 Adjudication

Adjudication is a rapid, interim-binding dispute resolution procedure most closely associated with the construction sector, where it was placed on a statutory footing by the Housing Grants, Construction and Regeneration Act 1996 (the "Construction Act") in the United Kingdom (Dancaster, 2008). It was introduced as a mandatory procedure for determining disputes in the construction industry, and section 108 confers on any party to a construction contract the right to refer a dispute arising under the contract for adjudication "at any time." An independent adjudicator is appointed and typically reaches a decision within 28 days of referral, making it markedly quicker and cheaper than litigation or arbitration. The decision is binding but remains open to subsequent review in arbitration or litigation, hence its characterization as "temporarily binding." Where a contract lacks compliant adjudication provisions, the Scheme for Construction Contracts supplies a default model procedure.

2.7.3.5 Arbitration

Unlike other ADR methods, such as mediation and Direct Representation (DRBs), arbitration is a private, confidential process that can fully replace litigation. It is based on the contracting parties' obligation to resolve disputes through arbitration. The main legal framework governing arbitration in the U.S. is the Federal Arbitration Act (FAA). The FAA has significant implications at both early and later stages and serves as the core basis for arbitration practices in the country. Parties can limit arbitrators' authority to specific dispute types and set conditions for starting arbitration. Most arbitrations are managed by private organizations that provide procedural services; in the U.S., the American Arbitration Association (AAA) is the leading organization. Alternatively, parties may choose to handle the process themselves without hiring a third-party administrator (Loulakis et al., 2024).

2.7.3.6 *Expert Determination*

Expert determination is a contractual ADR process in which parties refer disputes to an independent specialist in the relevant field for a decision. It is grounded in contract, with the third party acting as an expert, not a judge or arbitrator. It is typically final and binding unless there is fraud or clear error, and there are no appeal rights (Jones, 2006). Because it is governed by contract rather than law, it offers flexibility, and the parties negotiate the details. It suits valuation disputes such as rent reviews, share valuations, or price adjustments, as well as technical disputes in sectors like IT, accounting, and oil and gas. Without a statutory enforcement mechanism, a binding decision is a contractual obligation enforced through the courts or arbitration.

2.7.3.7 *Med-arb and Arb-med (hybrids)*

These combine consensual and adjudicative processes in sequence. In med-arb, the parties first attempt mediation, and any issues left unresolved are then referred to arbitration for a binding decision, sometimes before the same neutral (Pappas, 2015). Arb-med reverses the order: the arbitrator reaches a decision but seals it while the parties attempt mediation, revealing the award only if mediation fails. Both aim to capture the flexibility of mediation with the certainty of a binding outcome, though using the same neutral for both raises concerns about confidentiality and impartiality.

2.7.3.8 *DRBs*

2.7.3.8.1 *Definition of DRBs*

On DOT projects, the dispute resolution procedure (DRB) is a nonbinding approach that involves a board of neutral professionals who make reasoned suggestions to the parties on how to resolve disputes (Erickson, 2024). These boards are also known as Dispute Boards, Dispute Resolution Boards, Dispute Review Panels, and Dispute Avoidance Boards. The organization of a DRB

is determined by whether it involves both dispute resolution and avoidance, has one or three members (Smith, 2020), is involved throughout the project, or is summoned for specific issues and disputes.

2.7.3.8.2 DRB Processes

The standard DRB system, supported by the DRBF and used by most DOTs, involves a three-member board established at the start of the project. This board remains involved throughout the project's duration and is responsible for dispute prevention. Such active participation helps prevent disputes and enables the DRB to perform its dispute-resolution functions more effectively (Smith, 2020). Additionally, it enables board members to build relationships with the parties on a basis of confidence and trust, increasing the likelihood that the parties will follow the DRB's recommendations if issues arise.

The Department of Transportation (DOT) uses standard dispute resolution boards (DRBs) on construction projects, with some requiring their use for all projects and others restricting their application. Ad hoc DRBs are convened when significant disputes occur in public-private partnership projects. Members are chosen through methods such as party nominations or mutual selection (Loulakis et al., 2024). The DRB conducts informal hearings and provides recommendations for resolving disputes. The formal process involves the parties submitting position papers, documents, and evidence, often with legal representation allowed (Pou et al., 2008). Additionally, the DRB can give advisory opinions, offering quick guidance on specific issues without a full hearing.

2.7.4 Multi-tiered Dispute Resolution in P3 Contracts

Multi-tiered dispute resolution clauses outline the contractual steps agreed upon by the parties to resolve future disputes (LLC, 2024). They specify phases for resolving disputes before

engaging in the final, often costly, stage of court or arbitration. These procedures vary but typically include consultation, mediation, and adjudication, culminating in arbitration or court proceedings (Al Tamimi & Co., 2024). Each stage indicates whether it is mandatory ("shall") or voluntary ("may"), but caution is advised when interpreting such language. Under English law, using multi-step dispute resolution clauses is common in construction and PPP contracts (Al Tamimi, 2020). Table 1 summarizes the different ADR processes.

Table 2: ADR Processes

ADR	Definition	Binding/Non-binding
Negotiation	Negotiation involves the parties (or their representatives) communicating directly to resolve their dispute without a third-party neutral.	Non-binding.
Mediation	Mediation is a dispute resolution process in which a neutral third party helps parties communicate, identifies genuine issues and interests, and proposes settlement options. The mediator has no stake in the outcome and cannot enforce any agreement.	Non-binding.
Conciliation	Conciliation is a consensual, facilitative process in which a neutral third party, the conciliator, helps disputing parties narrow their differences and reach a settlement.	Non-binding.
Adjudication	Adjudication is a rapid, interim-binding dispute resolution procedure an independent adjudicator is appointed and typically reaches a decision within 28 days of referral.	interim-binding
Arbitration	Arbitration involves presenting a dispute to one or more neutral parties who make a final and binding ruling.	Binding
Expert determination	Expert determination is a contractual ADR process in which parties refer disputes to an independent specialist in the relevant field for a decision.	Binding
DRB	DRB is a nonbinding method featuring a panel of neutral experts that provides reasoned recommendations to parties on dispute resolution. These panels are also called Dispute Boards, Dispute Resolution Boards, Dispute Review Panels, and Dispute Avoidance Boards.	Non-binding

2.7.5 ADR in Canadian P3 Projects vs US Projects

Canada follows a structured ADR process in P3 projects, primarily shaped by provincial agencies such as Infrastructure Ontario, Infrastructure BC, and Partnerships Saskatchewan. These

bodies use standardized project agreements with multi-step ADR procedures, typically detailed in Schedule 27, which require disputes to escalate from negotiation to mediation and, if necessary, to arbitration (Siemiatycki, 2020). Although designed for consistency, research indicates that parties often skip mediation and proceed directly to arbitration (Storow & Coleman, 2020). Case studies of projects such as the Eglinton Crosstown LRT and the Confederation Line reveal a disconnect between contractual intentions and actual practice. Additionally, the limited use of dispute review boards (DRBs) in Canada contrasts with international practices, highlighting missed opportunities for early dispute resolution (Roumboutsos & Chiara, 2022).

The U.S. features a varied ADR landscape for P3 projects, especially in contracts shaped by federal policies. The FHWA and state DOTs implement dispute-resolution hierarchies and ADR clauses in concession agreements to reduce litigation and maintain project progress (Geva-May, 2021; Loulakis, 2023). These contracts emphasize early dispute resolution through negotiation, escalation, and mediation rather than arbitration or court action (Loulakis, 2023). Dispute review boards have been used since the 1970s in tunneling and civil construction to resolve on-site disputes (USDOT, 2024). According to ASCE research, DRBs and mediation help minimize delays and promote collaboration in transportation projects (Cheung et al., 2002; Lee et al., 2016).

Canada relies heavily on standardized agreements, which offer clarity but often overlook mediation or DRBs, reducing their effectiveness. Conversely, the U.S. experiments with DRBs, but multi-tiered clauses frequently lead to fragmentation and inconsistency across states. ASCE scholars highlight that the success of ADR hinges on consistent yet adaptable application (Cheung et al., 2002; Lee et al., 2016). Both nations see the importance of ADRs but lack a unified framework that balances standardization and flexibility—crucial for predictability, cost savings, and stakeholder confidence in P3s. To fill this gap, this study compares Canadian and U.S. P3 projects,

using cross-case analysis to assess existing ADR mechanisms and develop a structured multi-tiered framework.

In summary, claims and disputes are inevitable in business and construction projects. Hence, all parties need to set clear rules for dispute resolution, including limits on time and funds. Proper dispute management that addresses everyone's concerns and employs transparent legal procedures can distinguish between quick, effective resolution and prolonged, expensive disputes that consume valuable time and resources.

CHAPTER 3 RESEARCH DESIGN AND METHODS

3.1 RESEARCH PROBLEM

Public agencies throughout North America are increasingly turning to Public-Private Partnerships (P3s) to address infrastructure demands, driven by budget constraints and the need for specialized expertise. These partnerships involve intricate contracts and significant financial commitments, which can create vulnerabilities when disputes arise among project stakeholders. Such disputes frequently result in delays, increased costs, and strained relationships, ultimately undermining the efficiencies and benefits that the P3 approach is intended to deliver.

Alternative Dispute Resolution (ADR) methods, including mediation, arbitration, and dispute review boards (DRBs), are now commonly recognized as preferred options for proactively addressing and resolving disputes in P3 projects. Nonetheless, despite their popularity, there remain notable inconsistencies in the explanation, organization, and application of ADR provisions within P3 contracts. The existing literature highlights significant variation in how ADR processes are integrated, managed, and enforced, leading to unpredictable effectiveness and inconsistent outcomes across projects and regions.

Further complicating the issue is the lack of standardized, evidence-based frameworks to guide the effective deployment and management of ADR in P3 contexts. Although some projects, such as the Elizabeth River Tunnels Project in Virginia, have successfully employed structured ADR mechanisms, such as DRBs and mediation, broader, systematic evaluations of these practices remain limited. Additionally, the mixed-methods approach of using systematic reviews, case studies, and the experiences and insights of practitioners and policy experts directly involved in P3 project management has not been thoroughly utilized in developing ADR frameworks, resulting in a significant gap between theoretical ADR practices and their practical application in real-world infrastructure projects.

Consequently, the absence of a comprehensive ADR framework tailored to P3 projects leads to inefficiencies, higher costs, and poorer project outcomes. This research aims to address this gap by analyzing current ADR practices, examining their contractual terms, comparing case studies to identify effective dispute resolution methods, and validating these methods through expert interviews. Addressing this issue will help create a standardized, practitioner-driven ADR framework explicitly designed for the unique contractual and operational environments of P3 infrastructure projects, ultimately promoting project success, stakeholder collaboration, and long-term value creation.

3.2 RESEARCH GAP

While Alternative Dispute Resolution (ADR) methods are increasingly recognized as effective tools for resolving disputes in Public-Private Partnership (P3) infrastructure projects, significant gaps still exist in current knowledge. Notably, there is little systematic understanding of how ADR practices are defined and applied within P3 agreements by public highway agencies in North America. The existing literature primarily comprises isolated case studies and anecdotal reports,

resulting in fragmented insights rather than a cohesive, comprehensive view of ADR use across different P3 projects.

Additionally, existing ADR research in P3 contexts frequently neglects the practical insights of practitioners and policymakers involved in P3 project delivery. There is a scarcity of scholarly studies that incorporate structured expert feedback to assess ADR effectiveness and establish best-practice frameworks. Consequently, a standardized, analytically validated ADR framework specifically designed to address the unique features and contractual complexities of P3 projects is missing from both the academic literature and professional practice guidelines.

This research seeks to address these key gaps by conducting a systematic review of ADR practices in P3 agreements, comparing different North American P3 infrastructure case studies, and incorporating structured expert validation through interviews. Addressing this gap will offer practical insights to project management literature and equip public and private stakeholders with a robust, evidence-based ADR framework to enhance dispute resolution in future P3 infrastructure projects.

3.3 RESEARCH OBJECTIVES

As governments face rising costs to repair, upgrade, and expand infrastructure, more public agencies are adopting Public-Private Partnerships (P3s) to deliver these vital projects. The complexity, high design standards, and high costs of these projects often lead to disputes during delivery. To reduce losses and improve efficiency, project stakeholders are increasingly relying on Alternative Dispute Resolution (ADR) methods.

Given this context, the objectives of this study were to:

1. Explore current practices and the articulation of ADR provisions within P3 contracts.
2. Identify best practices and challenges in ADR application.
3. Develop a comprehensive, standardized framework for implementing Alternative Dispute Resolution (ADR) in Public-Private Partnership (P3) projects across various jurisdictions.

3.4 RESEARCH QUESTIONS

The following research questions guided this study:

1. How has ADR been used in North American P3s over the past 30 years? What best practices and challenges emerge?
2. How do ADR clauses differ between U.S. and Canadian P3 contracts? What explains those differences?
3. How can these findings inform a unified multi-tier ADR framework? How do experts validate and refine it?

3.5 SIGNIFICANCE OF THE STUDY

This research is valuable both in practice and in academia. In practice, it provides public agencies and private partners with a standardized, validated multi-tiered ADR framework that improves clarity and efficiency in dispute resolution for P3 projects. This clarity will help reduce financial risks, prevent project delays, and strengthen stakeholder collaboration, ensuring infrastructure projects are delivered on time and within budget. Academically, the study fills important gaps in understanding ADR practices in P3 settings. Its combined approach—drawing on literature reviews, case studies, and expert interviews—provides a solid, evidence-based foundation for future researchers and policymakers to build on, thereby enhancing both scholarly knowledge and real-world practices in infrastructure project management.

3.6 RESEARCH METHODOLOGY

This research aims to enhance Alternative Dispute Resolution (ADR) in public-private partnerships (P3s) through a multi-phase, mixed-methods approach that is primarily qualitative (Creswell and Plano Clark, 2018; Johnson et al., 2007). The main qualitative components include literature content analysis, review of twenty concession agreements, and thematic analysis of

sixteen expert interviews. Each phase also integrates a quantitative element: bibliometric and publication trend analysis during the systematic literature review (examining co-occurrence frequencies and network metrics), quantification of clause-level case data into cross-case frequency counts (Sandelowski et al., 2009), and structured Likert-scale questions within expert interviews, with descriptive statistics used to support and rank thematic findings. This design aligns with Johnson et al.'s (2007) definition of a mixed-methods approach — combining qualitative and quantitative data collection, analysis, and inference to ensure robustness and completeness. It incorporates a systematic review, case studies, and expert interviews to gather comprehensive data and practical insights from existing literature, real-world experiences, and field experts. The flowchart below depicts the three-phase research process and illustrates how each phase contributed to the development of the framework.

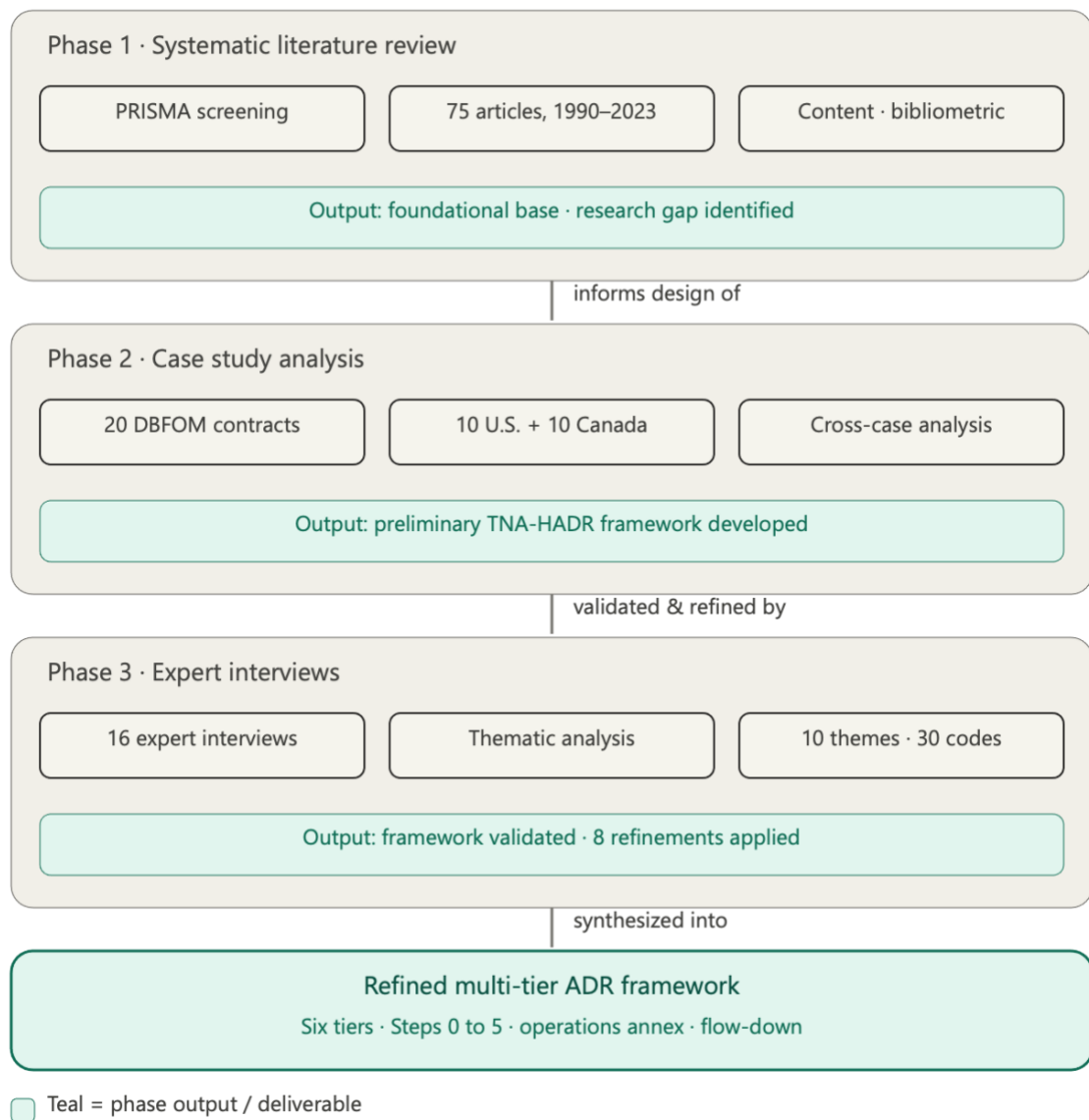


Figure 2 Methodology Flowchart

3.6.1 Systematic Literature Review

A systematic literature review (SLR) is a structured, transparent, and reproducible method for identifying, evaluating, and interpreting all available research relevant to a specific research question, using explicit and accountable procedures that distinguish it from a conventional narrative review (Kitchenham and Charters, 2007). By applying a predefined protocol for searching, screening, and synthesizing the literature, an SLR minimizes selection bias and systematically identifies

research gaps, thereby providing a rigorous foundation for positioning new research (Page et al., 2021).

3.6.1.1 Literature Search

Performed a comprehensive review of academic databases, including JSTOR, Google Scholar, Scopus, and PubMed, to find relevant studies, articles, and papers on ADR and P3s, using keywords like Alternative Dispute Resolution, P3/PPP disputes Resolution, and Construction Conflict. Also included are publications from major institutions, including the Federal Highway Administration (FHWA), the World Bank, the International Finance Corporation (IFC), the United Nations Commission on International Trade Law (UNCITRAL), the European Investment Bank (EIB), and the Inter-American Development Bank (IDB).

3.6.1.2 Inclusion Criteria

The literature review included peer-reviewed journals, conference papers, and key industry reports from the past thirty years, covering recent advancements and historical insights. The three-decade scope was chosen to capture the adoption of the 14th edition update to the 1987 AIA A201 General Conditions, which introduced provisions on arbitration in construction contracts (Shapiro, 1990).

3.6.1.3 Thematic analysis

Thematic analysis was conducted in accordance with the PRISMA framework for study selection (Toyin et al., 2024) (Page et al., 2021). Content, trend, and bibliometric analyses were used to identify key themes, track evolution, synthesize findings, and highlight influential contributions. The analysis was supported by science-mapping and visualization tools, including (Van Eck & Waltman, 2010) and Nvivo 15 (QSR International, 2021). This approach aims to clarify the current state of ADR in P3 projects and identify areas for further research and practical improvements.

3.6.2 Case Study Analysis

A case study analysis is an empirical research method that investigates a contemporary phenomenon in depth within its real-world context, particularly when the boundaries between the phenomenon and its context are unclear (Yin, 2018). In a multiple-case design, each case is first examined individually and then compared across cases, enabling the identification of patterns and supporting analytical generalization to theory rather than statistical generalization to a population (Eisenhardt, 1989; Yin, 2018).

3.6.2.1 Selection of Case Studies

This section primarily relies on ADR clauses drawn from contract documents of 20 P3 projects: 10 U.S. P3 infrastructure projects and 10 Canadian projects. These documents encompass contractual agreements, dispute management protocols, and relevant legal provisions available from the P3 project websites or state websites in the U.S., as well as from publicly accessible sources such as Infrastructure Ontario, Infrastructure BC, Partnerships Saskatchewan, and each project's website for Canadian projects. Additionally, they detail the procedures used for dispute resolution.

3.6.2.2 Data Collection

The sampling method was purposive, with projects selected based on size, the availability of contract documents, and inclusion of structured ADR processes. Project types were also selected in accordance with the Design-Build-Finance-Operate-Maintain (DBFOM) P3 model. Sampling continued until thematic saturation was achieved, ensuring a comprehensive understanding of ADR mechanisms within the selected projects. Saturation, rather than statistical thresholds, should determine sample size in purposive qualitative research (Abdel Aziz, 2021). Guest et al., (2006) found saturation within the first 12 interviews, with core meta themes present after 6. A quantity of 20 cases

exceeds the saturation threshold, indicating that the main themes are stable and recurring rather than incidental.

3.6.2.3 Analytical Approach

The analysis took place in two phases. First, a within-case analysis was conducted for each project to document the structure of ADR clauses, their usage levels, and dispute outcomes. This involved coding each case by ADR method (negotiation, mediation, DRBs, arbitration), whether procedures were followed or skipped, and the effects on cost, schedule, and stakeholder relations. Then, a cross-case comparison was performed to identify patterns, similarities, and differences, first within the Canadian and U.S. jurisdictions separately, and then across both jurisdictions.

3.6.3 Expert Interviews

An expert interview is a qualitative research method in which knowledgeable practitioners are engaged through a semi-structured protocol to elicit specialized, experience-based knowledge that is not accessible through documentary or quantitative sources alone (Meuser and Nagel, 2009). The semi-structured format combines a consistent set of core questions with the flexibility to pursue participant-specific elaborations, making it the established approach for accessing expert knowledge in construction management research, where the phenomenon of interest depends on situated professional judgment (Bogner, Littig, and Menz, 2009).

3.6.3.1 Identifying Experts

Identified and contacted specialists in ADR and P3 projects across private and public sectors, including ADR professionals like arbitrators, mediators, adjudicators, project managers, legal experts, and government officials experienced in P3 disputes. The research employed a combination of convenience and snowball sampling methods to find more experts, which increased the response rate and lead to data saturation.

3.6.3.2 *Interview Protocol*

We created a semi-structured interview protocol to maintain consistency yet allow flexibility in gathering unique insights. The questions targeted their experiences with alternative dispute resolution in P3s, their perceptions of its effectiveness, the challenges encountered, and the review of the developed ADR framework, along with suggestions for enhancing it.

3.6.3.3 *Data Collection and Analysis*

Interviews were conducted in person, over the phone, or via virtual meeting platforms (Microsoft Teams or Zoom), with recordings made upon consent to ensure accurate transcription. The gathered data was analyzed qualitatively to identify key themes and insights, which helped enhance the existing framework.

3.7 *Integration and Synthesis*

The literature review, case studies, and expert interviews were combined to thoroughly evaluate the current state of ADR in P3 projects. This integrated analysis served as the foundation for creating the proposed ADR framework, grounded in both theoretical understanding and practical insights. Using this mixed-methods approach, the study aimed to produce a well-rounded, reliable body of knowledge rooted in real-world practices, ultimately fostering significant enhancements in ADR processes within public-private partnerships.

CHAPTER 4 *Systematic Literature Review*

As previously mentioned, this systematic literature review (SLR) adheres to the PRISMA guidelines to ensure a thorough and transparent selection of relevant studies. The PRISMA framework consists of a three-phase checklist: identification, screening, and inclusion, as recommended by Toyin et al. (2024). This review spans three decades, from 1987 to the present, to

examine the influence of the 1987 update to the AIA A201 General Conditions 14th Edition, which introduced arbitration as an alternative dispute resolution (ADR) method in construction contracts (Shapiro, 1990). It investigates the evolution and impact of ADR in construction project delivery, offering a comprehensive synthesis of the literature.

The PRISMA approach ensures a detailed method for conducting the SLR (Toyin et al., 2024). A thorough search was performed across academic databases, primarily Web of Science and Google Scholar, with an emphasis on the ASCE database. This combination aimed to maximize coverage by including a broad range of indexed publications in engineering, critical for understanding the various applications of ADR in construction projects. Search keywords included: "Alternative Dispute Resolution," "ADR in construction," "arbitration in construction," "mediation in construction disputes," "dispute resolution in construction contracts," "P3/ PPP Conflict resolution," "Construction Conflict," and "AIA A201 General Conditions arbitration." Boolean operators (AND, OR) refined the search to focus on ADR methods within construction contexts. The search results, including complete records and cited references, were exported in tab-delimited, RIS, and CSV formats. These datasets were then analyzed thematically using science mapping and visualization tools such as VOSviewer (Van Eck & Waltman, 2010) and Nvivo 15 (QSR International, 2021).

4.1 Research Findings

The Systematic Literature Review (SLR) was organized into distinct sections to provide a thorough overview. The initial section presents a descriptive analysis of bibliometric data from the selected databases, emphasizing key metrics such as publication trends, citation patterns, and influential contributions to ADR in construction. The next part involves a detailed content analysis of the identified articles, offering a qualitative review of themes, methodologies, and key findings related to ADR approaches. The final section synthesizes insights from both bibliometric and content evaluations, discussing broader trends and emerging themes. This structure ensures a

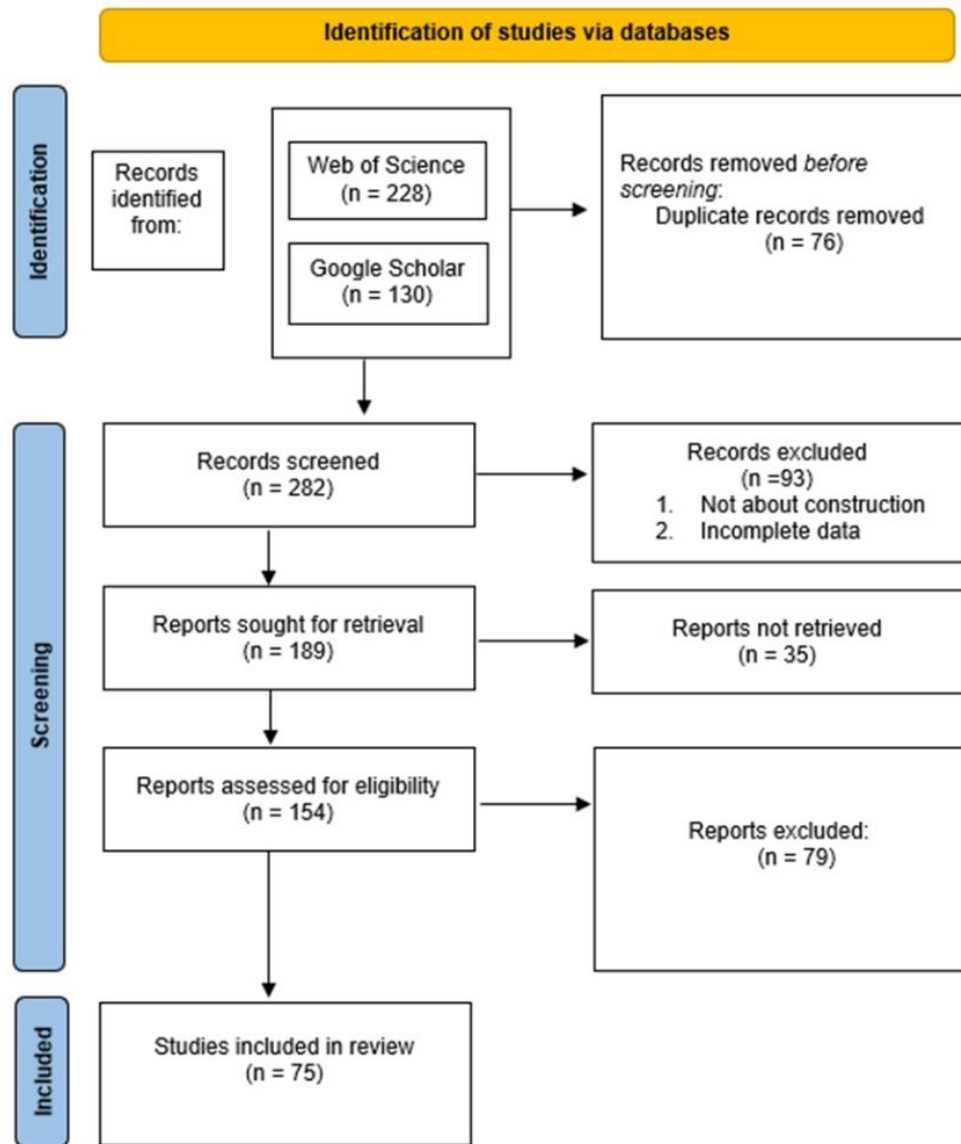
balanced exploration by combining quantitative and qualitative perspectives, leading to a comprehensive understanding of how ADR is adopted and its impact on construction project delivery.

4.1.1 PRISMA Framework for SLR

The initial search retrieved 358 articles. After eliminating duplicates, we screened 282 unique studies for relevance based on titles and abstracts. Next, we reviewed the full texts of 154 articles using our inclusion and exclusion criteria focused on ADR relevance. This process led to 75 selected studies. These articles were published between 1990 and 2023, spanning over three decades of ADR research.

Figure 1 below presents the PRISMA flow diagram, which outlines the study selection process. It shows the number of records identified, screened, and included in the review.

Figure 3 PRISMA framework for Article Selection



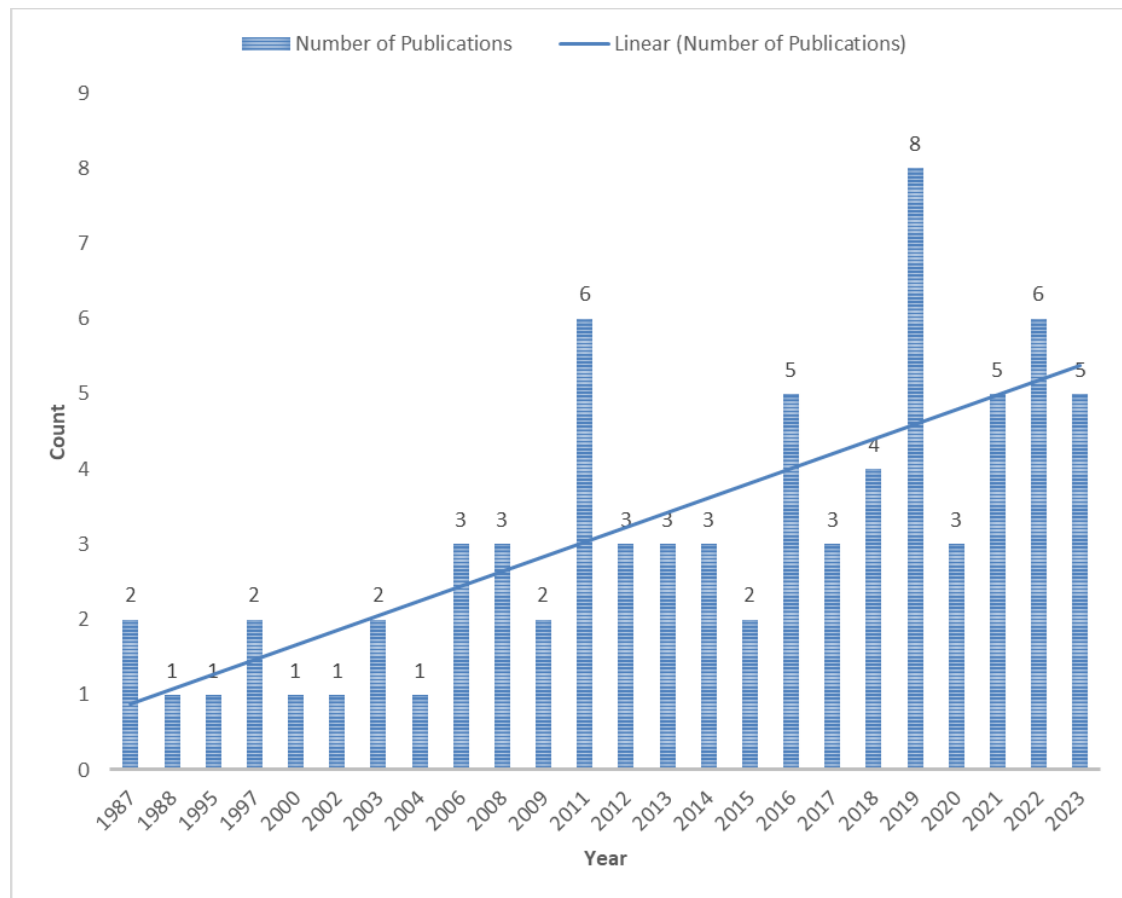
4.1.2 Bibliometric Analysis

Next, the study conducted a bibliometric analysis utilizing NVivo 15 for qualitative content analysis and VOSviewer for citation and co-occurrence analysis. These tools allowed for an in-depth exploration of the literature's quantitative and qualitative facets, offering insights into publication trends, major research contributions, and thematic patterns within the field.

4.1.3 Publication Trend

The number of ADR-related publications from 1987 to 2023 has grown, as depicted in Figure 2. This rise aligns with the inclusion of ADR clauses in construction contracts following the 1987 revision of AIA A201 General Conditions. However, 2020 showed a notable decline in publications, likely due to the COVID-19 pandemic disrupting research and industry activities. The increase in publications reflects heightened focus on ADR frameworks, driven by changes in construction dispute dynamics and technological progress (Lok et al., 2024). Additionally, the integration of information and communication technology into ADR has recently affected publication trends. Toyin and colleagues (2024) demonstrate that construction dispute resolution increasingly uses automated AI-supported online platforms (ODR), which may explain the recent rise in ADR-related publications. As shown in Figure 2, the annual number of publications has steadily increased from 1987 to 2023. This trend aligns with the 1987 update to the AIA A201 General Conditions, which introduced ADR provisions into construction contracts. Although there was a temporary dip in 2020, the number of publications has since rebounded.

Figure 4 Publication per Year



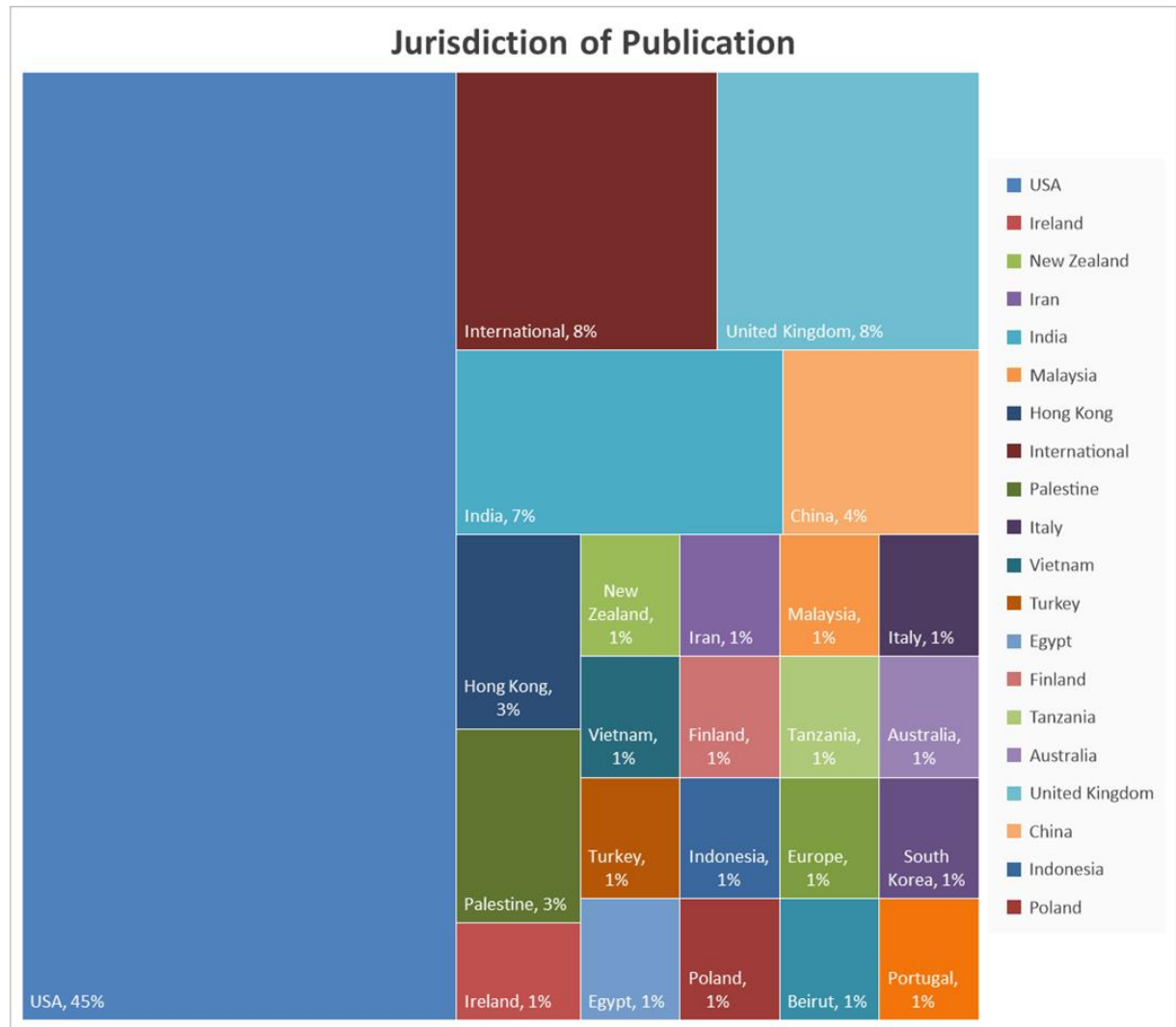
4.1.4 Jurisdiction of Publication

The geographic distribution of publications indicates that the USA (45%) leads in mediation and arbitration publications, reflecting the widespread acceptance of these practices in construction disputes. The United Kingdom (8%) follows, primarily because adjudication is commonly used in construction contracts (Besaiso, Fenn & Emsley, 2018).

India (7%), China (4%), and Hong Kong (3%) have also contributed to the ongoing internationalization of ADR. Figure 3 illustrates the distribution of publications by jurisdiction. The study by Menassa & Peña Mora (2010) highlights the use of construction dispute resolution boards (DRBs) in American projects and how this influenced the globalization trends of ADR systems.

Gregory-Stevens, Frame, and Henjewe (2016) carried out a UK study on mediation in construction disputes, focusing on regional differences in ADR adoption. They found that despite adjudication being widely preferred in the UK, mediation is underutilized for improving business relationships.

Figure 5 Jurisdiction of Publication



4.1.5 Journal and Publication

Figure 4 indicates that 43% of the reviewed ADR-related research is published in the Journal of Legal Affairs and Dispute Resolution in Engineering and Construction (32). Other notable

contributors include the Journal of Management in Engineering with 23% (17), the Journal of Professional Issues in Engineering Education and Practice with 5% (4), Asia Pacific Business Review with 3% (2), the Journal of Infrastructure Development with 3% (2), and the remaining at 1% each (1). These journals highlight the growing focus on ADR, particularly in arbitration, mediation, and adjudication as dispute-resolution mechanisms.

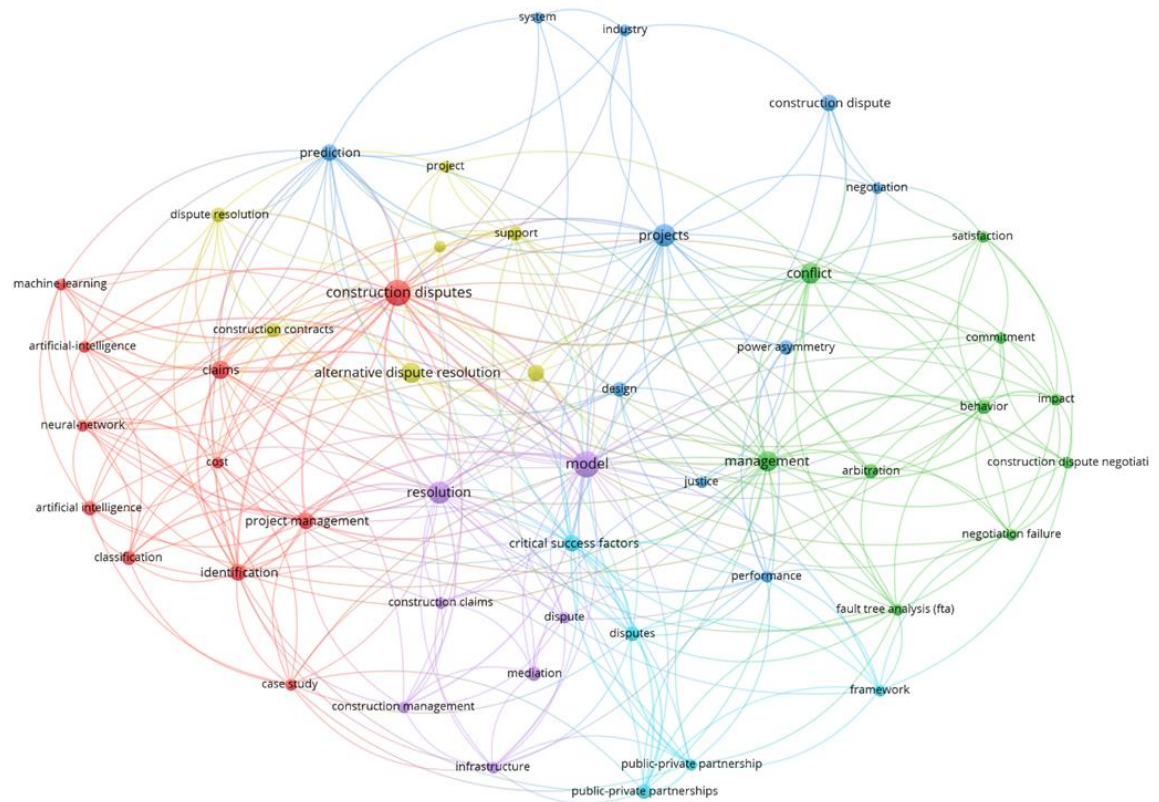
Figure 6 Journal and Publication



4.1.6 Co-occurrence analysis

Co-occurrence analysis in VOSviewer was conducted to examine relationships among keywords and identify key themes in the reviewed ADR literature. The analysis assessed how often specific terms appeared together in titles, abstracts, and keywords across the selected studies, revealing patterns in research focus over time. By mapping the co-occurrence of keywords such as "arbitration," "mediation," "construction disputes," "contract," and "project management," VOSviewer generated clusters of related terms. These clusters represent main research areas, with closely linked terms indicating conceptual connections in the literature. For example, terms related to arbitration often appeared alongside those about legal frameworks and negotiation failures, while construction disputes were frequently linked to claims and costs. The visual network generated by VOSviewer provided an intuitive way to observe the evolution of research topics, illustrating how different ADR methods relate to specific types of construction disputes and project outcomes. The results are shown in Figure 5, where themes are color-coded by cluster. For instance, arbitration in the green cluster is associated with terms like 'management,' 'conflict,' and 'negotiation failure,' indicating that these concepts often co-occur in arbitration studies. The proximity of certain clusters suggests close thematic relationships, such as legal frameworks and contract enforcement linked to arbitration, while mediation in the purple cluster correlates with collaborative dispute resolution and cost-efficiency.

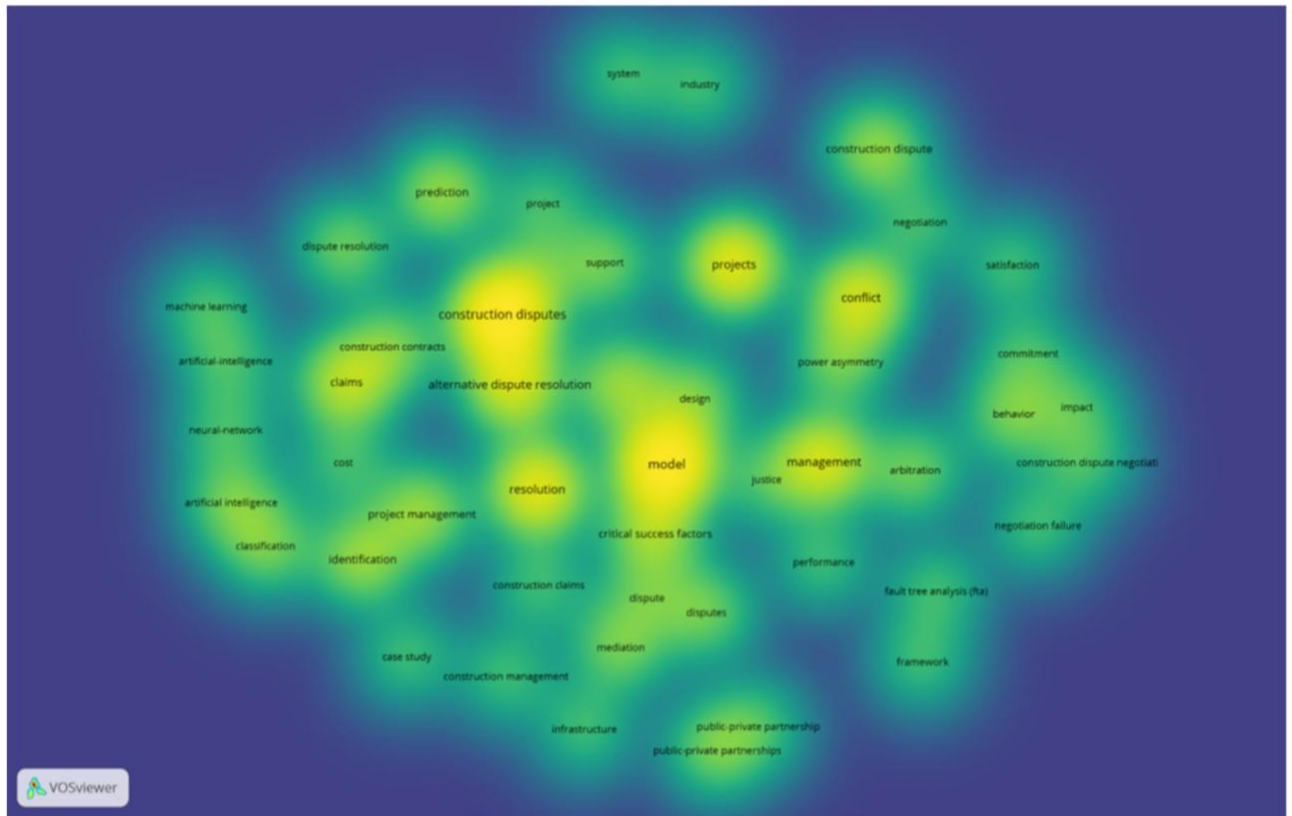
Figure 7 Co-occurrence Network Visualization



4.1.7 Density Visualization

Using density visualization, as illustrated in Figure 6, systematic co-occurrence aligns with relevant concentration and prevalence rates in an analysis. This mainly involves identifying regions of higher importance, highlighted by blurring and brightness adjustments applied to specific footage or images. According to Lee, Yiu, and Cheung (2016), ADR studies have expanded significantly. In particular, research on multi-tiered ADR systems has grown rapidly, attracting new clusters focused on mediation-adjudication hybrid models. This trend is reflected in the increasing focus on and frequency of mediation- and adjudication-related terminology in recent studies.

Figure 8 Density Visualization from VOSviewer



4.1.8 Word Frequency

The word frequency analysis conducted in NVivo 15 identified the most common terms in the selected articles. These results highlighted key themes within ADR scholarship. Figure 7 shows the word cloud generated by NVivo 15.

Key terms such as "arbitration" and "dispute process" stood out, particularly concerning contracts where arbitration is commonly used for resolving disputes. Additionally, the project's creators and key concepts like adjudication, expert determination, and method selection recurred frequently, emphasizing the growing significance of ADR discussions.

Harmon's (2003) findings support this perspective, noting that arbitration is a leading method for resolving construction disputes, though it has limitations in addressing deeper relationship

4.1.9.1 The need for the analysis

Over the three decades since the 1987 update to the AIA A201 General Conditions introduced arbitration as a standard ADR mechanism, scholarship on dispute resolution in construction and public-private partnership (P3) contexts has expanded substantially but unevenly. The literature spans multiple disciplines, jurisdictions, and methodological traditions, with no single source offering an integrated map of the field. A conventional narrative review of this body of work would have been vulnerable to two weaknesses: selection bias, in which the reviewer unconsciously favors familiar or confirmatory sources, and structural blindness, in which the conceptual relationships among research streams remain invisible because they are never made explicit. Establishing the research gap by assertion, rather than by demonstration, would have left the dissertation's foundational premise open to challenge.

The PRISMA framework was adopted to address the first weakness. Its three-phase protocol of identification, screening, and inclusion imposes a transparent and reproducible discipline on study selection, ensuring that the 75 articles ultimately analyzed were chosen against explicit, auditable criteria rather than by convenience. NVivo 15 and VOSviewer was adopted to address the second weakness. As a science-mapping and bibliometric visualization tool, it objectively reveals the conceptual structure of the literature through co-occurrence networks, density visualizations, and keyword clustering, surfacing relationships among concepts that a manual reading of the same articles would be unlikely to detect. Together, the three tools were necessary to ground the dissertation's premise empirically: to demonstrate, rather than assume, both the state of the field and the specific gap this research sets out to fill.

4.1.9.2 The output of the analysis

The analysis produced several findings not available before its execution. The publication-trend analysis confirmed steady growth in ADR scholarship across the study period, with a

temporary 2020 decline attributable to the COVID-19 pandemic, and established the United States as the dominant publication jurisdiction, accounting for approximately 45 percent of the relevant literature. The co-occurrence analysis generated distinct thematic clusters: arbitration appeared consistently alongside terms related to legal frameworks, management, and negotiation failure; mediation correlated with collaborative resolution and cost-efficiency; and construction disputes were closely linked to claims and costs. The density visualization identified where research attention has concentrated and, equally important, where it remains sparse, while the word-frequency analysis confirmed the field's dominant conceptual vocabulary.

Two outputs proved especially consequential. First, the bibliometric mapping established that research on multi-tiered ADR systems is the fastest-growing cluster in the field, with hybrid mediation-adjudication models and online dispute resolution platforms representing the most recent frontiers. Second, and most importantly for this dissertation, the analysis revealed a clear and previously undocumented gap: despite the growing volume of literature on ADR in construction, no study had systematically compared ADR clause structures across a sample of North American DBFOM P3 contracts. This gap, surfaced empirically through the systematic analysis rather than asserted on intuition, became the organizing problem for the entire research.

4.1.9.3 How the analysis benefits the current research

The PRISMA/ NVivo 15 / VOSviewer analysis benefits this research in three concrete ways. First, it provides empirical justification for the dissertation's central premise. The demonstration that multi-tiered ADR is the dominant and fastest-growing paradigm in the literature directly validates the decision to focus the research on a multi-tiered framework, rather than defending a single mechanism, such as arbitration or mediation, in isolation. Second, the thematic clusters identified through the analysis supplied the conceptual vocabulary and analytical orientation that shaped the subsequent phases. The clusters relating to ADR structure, mechanism effectiveness, and

jurisdictional context anticipated several of the five sensitizing categories that later formed the deductive coding frame for the expert-interview phase, giving the qualitative analysis a literature-grounded starting point rather than an arbitrary one. Third, the analysis defined the precise boundary of the contribution this research could make, focusing the case study phase on the specific cross-jurisdictional, clause-level comparison that the field had not yet undertaken.

4.1.9.4 Position within the ADR framework development

Within the three-phase architecture of this dissertation, the PRISMA/ NVivo 15 / VOSviewer analysis constitutes the foundational first phase from which the framework development proceeds. It does not, by itself, produce the ADR framework; rather, it establishes the conceptual landscape and the empirical gap that make the framework necessary and define its scope. The analysis fed directly into the second phase, the comparative case study of twenty DBFOM P3 contracts, which addressed the gap identified in the literature review and produced the preliminary Trans-North American Hybrid ADR (TNA-HADR) framework. That preliminary framework was, in turn, validated and refined through the third phase of expert interviews, yielding the six-tier instrument presented in this dissertation. The bibliometric finding that multi-tiered ADR represents the prevailing trajectory of the field is therefore not an incidental observation but the empirical warrant for the framework's fundamental multi-tiered architecture. In this sense, the systematic literature review is both the origin point and the evidentiary anchor of the framework development that follows.

4.2 Content Analysis

4.2.1 Historical Context

This phase focused on analyzing studies concerning the increase in ADR in construction. Over time, new ADR methods have been introduced to address challenges and settle disputes in the construction sector.

Fenn, Lowe, and Speck (1997) were pioneers in studying conflict dynamics in construction. They differentiated conflict from dispute, noting that conflict is rooted in differing opinions, whereas disputes are measurable issues. Disputes often originate from unresolved conflicts, the result of injury, and third-party involvement. This research, conducted in the UK, examined both the construction and chemical sectors. As with most products, implementing structured ADR systems generally yields more effective results, reducing unproductive outcomes and thereby minimizing the occurrence of disputes.

Similarly, Stipanowich (1996) critically examined arbitration, noting that although it moved beyond litigation, it also grew increasingly ritualistic and formalized. He advocated reforms to improve its efficiency and reduce costs, which would make arbitration more cost-effective and thereby increase the viability of mediation and adjudication. His work acknowledged the significant integration of ADR within the construction industry via contract law.

In the United States, Rubin and Quintas (2003) noted an increase in the institutional use of ADR in public works projects. They proposed a combined ADR model that integrates both mediation and arbitration as core components of public construction contracts. This approach gained popularity when the American Institute of Architects (AIA, 2017) incorporated ADR clauses into its standard construction contracts, establishing mediation and arbitration as the primary dispute resolution options.

Table 2 below shows the number of published articles on those approaches from 1990 to 2023.

Table 1 Number of Articles Published per ADR Method (1990-2023)

ADR method	No. of articles
Arbitration	96
Mediation	67
Adjudication	25
DRBs	12

4.2.2 Development of ADR Methods

New dispute resolution strategies emerged, prompting researchers to broaden their focus from arbitration and mediation to ADR. In Hong Kong's construction industry, Cheung, Suen, and Lam (2002) analyzed ADR processes and found that adjudication, conciliation, and hybrid ADR methods served as lower-tier alternatives to litigation and arbitration. Their research also introduced criteria for selecting ADR methods, emphasizing dispute type, project complexity, and stakeholder relationships to determine the most suitable approach. Mitropoulos and Howell (2001) built on this by proposing a model to prevent disputes. The model argued that effective conflict management depends more on organizational planning than on contractual obligations and advocated early intervention measures such as risk management and project audits. Harmon (2003) further evaluated the advantages and disadvantages of ADR, highlighting that standard arbitration and mediation often neglect important relationship factors, which spurred the creation of Dispute Resolution Boards (DRBs) as a new tool for primary dispute prevention.

Following this, Agdas and Ellis (2013) examined DRBs in their case study. Their use in large-scale infrastructure projects was associated with a 12.92% reduction in schedule delays and a 12.92% decrease in cost overruns. They found that DRBs are among the most effective dispute resolution strategies in construction, with a 97% success rate. International construction contracts increasingly favor adjudication as a form of ADR. Abdul-Malak and Senan (2020) studied adjudication as a key part of stepwise dispute resolution systems, highlighting the dominance of FIDIC, NEC, and JCT models. Their findings indicate that adjudication is especially suitable for fast-track projects that require timely dispute resolution to avoid delays. Besaiso, Fenn, and Emsley (2018) provided a regional perspective through their study of arbitration in Palestine, confirming that while arbitration is widespread, its popularity is waning due to high costs and inefficiency.

Consequently, there is a growing reliance on alternative, less expensive cross-border arbitration methods, often involving jurisdictions with vastly different legal systems.

4.2.3 Multitiered ADR and Dispute Avoidance

A key observation from the 2010s is the growing emphasis on mechanisms for resolving and preventing disputes, especially among researchers studying these processes. Although the study of multitiered dispute resolution (MADR) in construction emerged later, it is understood to have developed earlier because it integrates different ADR systems to enhance efficiency and flexibility in resolving construction disputes. Jones (2006) was among the first to examine the complexities of long-term construction contracts, particularly pricing uncertainties and disputes. He proposed that dispute resolution be viewed as a multi-step process combining various ADR methods, with lower tiers addressing early disputes to prevent escalation to formal mechanisms such as litigation or arbitration. Additionally, Gregory-Stevens, Frame, and Henjeweale (2016) examined the use of adjudication as the primary dispute resolution method in England. While intended to be efficient and cost-effective, adjudication was found to have limitations, including damage to business relationships, lengthy processes, and costs that sometimes approached those of arbitration. They recommended mediation as an initial step because it helps preserve relationships and encourages amicable solutions. However, their study also found that mediation is not widely practiced in England's construction industry due to a lack of awareness and weak mediation clauses in contracts.

Multilayer alternative dispute resolution (ADR) clauses are increasingly used in international construction projects to address jurisdictional and legal variations between countries. According to Thi Hoa and Hoang Tu Linh (2023), MADR clauses in these projects reflect a growing trend of using ADR methods before arbitration in nearly all high-value contracts. Their research shows that pre-arbitration processes such as mediation, dispute resolution boards (DRBs), and adjudication have

become standard. Additionally, the adaptable nature of MADR clauses allows parties to tailor dispute resolution mechanisms to the level of the dispute, helping to avoid expensive legal proceedings. Recent insights highlight the growing importance of multitiered ADR approaches. Lok et al. (2024) conducted a bibliometric and content analysis to identify patterns in construction disputes. Over the past decade, arbitration within multitiered dispute resolution systems has notably increased. However, they observe that most studies focus on resolving conflicts rather than defining them. Their findings also point to a rising interest in hybrid models combining arbitration, mediation, and adjudication, especially for complex legal disputes in international construction projects. These trends suggest that the rising use of multitiered models is driven by expectations that future ADR frameworks will incorporate bilateral and multilateral negotiations to address disputes proactively.

4.2.4 Trends in ADR

Employer-employee relationships in construction continually evolve with technological advances, prompting the development of specialized online ODR systems for dispute resolution. These platforms offer far more efficient solutions than traditional construction conflict management methods. However, the growing legal complexities in construction projects—caused by stakeholder fragmentation, differing legal systems, and varying locations and time zones—have made effective dispute resolution more difficult. Ojiako et al. (2018) examined the legal and justice-related limits on resolving construction disputes through ODR. They found that ODR should be more widely adopted due to its high potential compared to other ADR types, but noted that empirical evidence supporting its effectiveness remains limited. Additionally, some practitioners are hesitant to embrace the technology because of concerns about enforcement, fairness, and insufficient IT skills.

In addition to ODR, artificial intelligence (AI) is increasingly prominent in ADR Foundations. McGinnis and Pearce (2014) argued that AI has the potential to transform dispute resolution by

automating routine legal tasks. They noted that, although electronic legal services are still emerging, these developments go beyond merely addressing disputes—they represent an evolution. AI is expected to streamline ADR activities, including reviewing legal documents, preparing memoranda and briefs, conducting research, and forecasting case outcomes. Furthermore, AI systems could assist with initial decision-making for straightforward cases by analyzing adjudicatory precedents and contract terms to suggest possible solutions.

Toyin et al. (2024) examined the broader impacts of information and communication technology (ICT) on Alternative Dispute Resolution (ADR) through a bibliometric and systematic review of ICT use in construction projects. Their findings indicate that the construction industry has actively adopted new technologies to boost productivity. The study highlights the potential of ICT, especially cloud-based services, to enhance ADR by enabling real-time communication, document sharing, and video conferencing for mediation. Integrating technology into ADR can significantly improve efficiency, reduce costs, and increase participation in international construction disputes.

Over the past decade, and particularly in the last ten years, more attention has been paid to adjudication and Dispute Resolution Boards (DRBs). As Salem, Elwakil, and Hegab's (2023) study illustrates, the resolution of construction disputes in the age of technology features the growing use of digital tools and AI-powered analysis in adjudication and arbitration. The study proposes resolving construction disputes through hybrid approaches that incorporate these newer technologies. Advanced construction project management approaches are being accepted, and they emphasize the need for active and flexible forms of ADR, suggesting proactive shifts within the industry.

4.2.5 Outcomes of the Content Analysis and Formal Definitions of ADR

This subsection summarizes the main findings from the content analysis. It begins by identifying the software applications employed in the systematic review and their specific analytical functions. Next, it presents the formal, literature-based definitions of the alternative dispute

resolution (ADR) methods that appeared repeatedly throughout the reviewed material. Combining these definitions here creates a shared terminology that will underpin the subsequent discussion in Section 14.4, the case study phase, and the framework development.

4.2.5.1 Software applications used in the analysis

Two software applications supported the systematic review, each serving a distinct analytical function. NVivo 15 (QSR International) was used for the qualitative content analysis of the 75 included articles. The software enabled systematic coding of full texts, the organization of coded material into thematic categories, and the consistent retrieval of passages associated with each theme, thereby supporting a transparent and auditable qualitative synthesis. VOSviewer (Van Eck and Waltman, 2010) was used for the bibliometric component of the review. It generated keyword co-occurrence networks, density visualizations, and thematic clusters reported in the preceding subsections, allowing the conceptual structure of the literature to be examined objectively through science mapping rather than narrative reading alone. The two tools were complementary: NVivo supported the qualitative interpretation of what the literature says, while VOSviewer revealed the quantitative structure of how the field is organized and where research attention has concentrated.

4.2.5.2 Formal definitions of ADR methods

The content analysis identified six ADR mechanisms that recur consistently across the literature on construction and public-private partnership (P3) dispute resolution. They are defined below in ascending order of formality and binding force, an ordering that also reflects the escalating logic of the multi-tiered model that emerged as the dominant paradigm in the bibliometric analysis. These definitions provide the conceptual foundation for the tiered framework developed in the later phases of this research.

Negotiation is the most informal and least costly ADR method, consisting of direct, voluntary discussion between the disputing parties without the involvement of any third party. Negotiation

preserves complete party control over both the process and the outcome, produces no binding result unless the parties reach and document a settlement, and is typically positioned as the first step in any structured dispute resolution sequence.

Mediation is a voluntary, non-binding process in which a neutral third party, the mediator, facilitates communication and helps the disputing parties reach a mutually acceptable settlement. The mediator has no authority to impose an outcome; any resolution remains the product of the parties' agreement. Mediation is valued in the literature for its relationship-preserving character, cost-efficiency relative to adjudicative processes, and effectiveness, which is widely held to depend on the mediator's subject-matter expertise.

Dispute Review Board (DRB). A standing panel, ordinarily of three experienced and independent members, constituted at or near the commencement of a project to monitor progress, conduct regular site visits, and issue recommendations on disputes referred to it during construction. DRB recommendations are usually non-binding but admissible in subsequent proceedings. The mechanism is increasingly recognized in the literature as functioning at least as much as a dispute-prevention instrument as a dispute-resolution one, owing to the behavioral discipline created by ongoing board oversight.

Adjudication is a process in which a neutral adjudicator renders a rapid, binding interim determination on a referred dispute, pending final resolution by arbitration or litigation. Developed to maintain cash flow and project momentum during construction, adjudication trades some procedural thoroughness for speed and is a defining feature of several international and statutory dispute regimes.

Arbitration is a private, adversarial process in which the parties submit their dispute to one or more arbitrators whose decision, the award, is final, binding, and enforceable, generally serving as a substitute for court litigation. Arbitration offers the parties the ability to select decision-makers

with relevant technical expertise, procedural flexibility, and confidentiality. It has historically been the dominant formal ADR mechanism in construction contracts since the 1987 update to the AIA A201 General Conditions introduced it as a standard provision (Shapiro, 1990).

Multi-tiered (or multilayered) ADR is a contractual mechanism that organizes several of the foregoing methods into a defined, escalating sequence, requiring the parties to progress through lower, less formal tiers, such as negotiation and mediation, before resorting to binding resolution through arbitration or litigation. The literature identifies multi-tiered ADR as the fastest-growing approach in construction and P3 contexts, valued for its capacity to resolve routine disputes efficiently at lower tiers while reserving costly formal proceedings for the minority of disputes that genuinely require them (Thi Hoa and Hoang Tu Linh, 2023; Lok et al., 2024).

A binding decision is a ruling made by a neutral third party—such as an arbitrator, adjudicator, board, or court—that enforceably requires the parties to comply, with enforcement possible through the courts (Harmon, 2003). Once issued, it definitively settles the dispute, with only limited review available within the specific forum, such as the narrow statutory grounds for overturning an arbitral award (Cheung, 1999; Harmon, 2003). Its key characteristic is finality: parties waive their right to relitigate the issues in exchange for a definitive resolution. In the contracts analyzed here, binding effectiveness generally occurs at the final stage, such as arbitration awards and court judgments, and occasionally at intermediate levels, such as the Texas Disputes Board.

A non-binding decision is an opinion or suggestion made by a neutral third party, which the involved parties are not legally required to accept (Cheung, 1999). Its role is to persuade and assist rather than to decide definitively: by offering an expert assessment of the case's merits, a non-binding recommendation can influence each party's evaluation of their best alternative to a negotiated agreement (BATNA), encouraging voluntary resolution (Fisher and Ury, 1981; Harmon, 2003). Typical examples include recommendations from Dispute Review Boards, mediator reports,

and advisory panel opinions. Such decisions do not resolve the dispute; either party can still escalate the matter within the contractual framework. However, in well-run systems, most disputes are resolved based on the recommendation without further legal steps (Menassa and Peña Mora, 2010).

An interim-binding decision is a ruling that immediately binds the involved parties, requiring compliance such as payment, but it can later be reopened and finally settled through processes like arbitration or litigation (Abdul-Malak and Senan, 2020). The concept of statutory construction adjudication, introduced by the UK's Housing Grants, Construction and Regeneration Act 1996 and adopted in Ontario's Construction Act and Saskatchewan's Builders' Lien (Prompt Payment) Amendment Act, exemplifies this approach: the adjudicator's decision is enforceable right away to maintain cash flow and project momentum under the "pay now, argue later" principle, while still allowing parties to seek a final determination on the merits (Abdul-Malak and Senan, 2020).

A binding-unless-arbitrated decision is a ruling that becomes permanently binding unless a party initiates the next level within a specified contract period. This approach is common for Independent Certifier milestone and expert determinations in the Canadian agreements studied, as well as for the advisory arbitration in the Ohio River Bridges East End Crossing agreement, which turns binding if not rejected within thirty days. This structure mirrors the enforceability of dispute board decisions under FIDIC contract conditions, where a decision is final and binding if no dissatisfaction notice is filed within the given time (Bunni, 2013). It provides an efficient resolution for most disputes that remain uncontested, while allowing an exit for those requiring full adjudication.

Table 2 summarizes these six methods by binding status, the nature of the third party involved, their relative formality, and their core definition.

Table 3 Formal definitions and characteristics of the principal ADR methods

Negotiation	Non-binding	The parties themselves	Lowest	Direct, voluntary discussion between disputing parties without third-party involvement.
Mediation	Non-binding	Neutral facilitator	Low	A neutral third party facilitates settlement but has no authority to impose an outcome.
Dispute Review Board	Usually non-binding (admissible)	Standing expert panel	Moderate	A standing panel of experts monitors the project and issues recommendations on referred disputes.
Adjudication	Binding on an interim basis	Appointed adjudicator	Moderate-high	A neutral renders a rapid decision that binds the parties pending final resolution.
Arbitration	Binding and enforceable	Arbitrator or tribunal	High	A private adversarial process producing a final, enforceable award in lieu of litigation.
Multi-tiered ADR	Escalating (per tier)	Sequential (per tier)	Graduated	A contractual sequence escalating from negotiation through to binding resolution.

Taken together, these definitions and the software-supported analysis that generated them form the main substantive output of the content analysis. They establish the terminology and the conceptual ordering, from informal and non-binding to formal and binding, on which the discussion in Section 14.4 and the framework development in the subsequent phases of the dissertation depend.

4.3 SLR Discussion

Over the past 30 years, the use of Alternative Dispute Resolution (ADR) in the construction industry has expanded significantly. This review employs bibliometric and content analyses of ADR to identify key trends and themes from the past twenty years. It provides a detailed explanation of how ADR interacts with the construction sector, drawing on insights from both analyses. Findings indicate that several important relationships underpin most ADR practices over the past three decades. While arbitration, mediation, and Dispute Resolution Boards (DRBs) are now well-established dispute resolution methods in construction projects, their performance relative to other

forms of litigation remains uncertain. Unresolved disputes continue to incur high costs, cause delays, and compromise the quality of work delivered (Besaiso, Fenn & Emsley, 2018). Consequently, various ADR processes have been developed to improve effectiveness, reduce disputes, and align with the interests of construction parties.

A key debate in ADR studies centers on whether arbitration or litigation is more effective. Arbitration was designed to offer a more flexible, less adversarial alternative to litigation, which often involves lengthy court proceedings. However, evidence indicates that arbitration is not always more cost-effective. Gebken and Gibson (2006) analyzed transactional costs across various dispute resolution methods and found that arbitration can be just as costly and time-consuming as litigation. Harmon (2003) also addressed this issue, arguing that the formalized procedures intended to boost efficiency have, in fact, led to increased complexity and rigidity. Similarly, Instapanowich (1996) noted that while arbitration initially simplified litigation, it has begun to resemble litigation more closely, resulting in higher costs and longer durations. Ultimately, arbitration's success depends on the arbitrator's expertise, the process structure, and the specific type of dispute.

In addition to arbitration, Dispute Resolution Boards (DRBs) are increasingly adopted as a proactive Alternative Dispute Resolution (ADR) method in construction projects. Their primary role is to prevent disputes from escalating and to provide real-time solutions throughout a project's duration. Agendas and Ellis (2013) highlight that DRBs are highly effective in large-scale infrastructure projects, primarily in avoiding disputes. Their research indicates that projects using DRBs experienced 12.92% fewer schedule delays and 6.88% lower costs, demonstrating the approach's effectiveness. However, DRBs also face challenges related to impartiality and consistency. Besaiso et al. (2018) argue that the absence of standardized norms for selecting DRB members can lead to subjective decisions. Additionally, administrative issues and concerns over

cost escalation, especially in lengthy disputes, raise questions about the long-term viability of DRBs in construction.

Single-method ADR strategies have limitations, prompting increased focus on hybrid models that incorporate multiple dispute resolution methods. Lee, Yiu, and Cheung (2016) highlight that construction disputes are complex and demand context-specific ADR approaches, often more advanced than simple hybrid models. These mediation-adjudication-arbitration frameworks are applicable to a wide range of cases with varying levels of difficulty. This supports Kandel, Eid, and Elhakeem's (2023) findings that, within hybrid dispute resolution systems, mediation should handle less critical issues, while arbitration takes on more significant ones. Their analysis suggests that such hybrid systems enhance the effectiveness of resolving disputes related to equity and expenditure.

Multilayered ADR mechanisms have proven effective in international construction agreements. These frameworks are increasingly favored over traditional methods because they better address adaptive dispute resolution challenges. According to Thi Hoa and Hoang Tu Linh (2023), multitiered ADR clauses help resolve jurisdictional and regulatory complexities in large-scale construction projects. Their research indicates that international contracts are increasingly using mediation, DRBs, and adjudication as preliminary steps to prevent the negative economic and procedural effects of litigation. Gregory-Stevens, Frame, and Henjeweale (2016) also support this perspective, arguing that relying solely on adjudication is ineffective because it is adversarial and often counterproductive. They recommend mediation as the initial step to resolve disputes before progressing to adjudication or arbitration.

Alongside process improvements, emerging devices are expanding ADR's scope through ODR and Artificial Intelligence. Ojiako et al. (2018) examined the legal and ethical aspects of ODR, highlighting its benefits as well as challenges related to enforcement and procedural fairness. Their

findings indicate that although ODR has the potential for greater cost savings and improved access, it remains underused because of technological demands and the absence of regulatory frameworks. Similarly, McGinnis and Pearce (2014) discussed how AI could fundamentally transform ADR, suggesting it might handle document reviews, predictive legal analysis, and even support lower-tier dispute resolution. The future of Automated ODR envisions a technology-enhanced era in which AI and other tools will complement traditional dispute resolution methods, increasing their efficiency and effectiveness without sacrificing due process.

The research findings expand understanding of the evolving scope of ADR in construction and underscore the importance of carefully selecting dispute resolution methods tailored to specific projects. While arbitration, mediation, and DRBs are common dispute resolution methods, their limitations call for more innovative approaches. Developing hybrid ADR techniques and multilevel dispute resolution systems enhances flexibility, adaptability, and precision in construction dispute resolution. Additionally, integrating technology, such as ODR and AI in legal processes, plays a vital role in improving efficiency and accessibility. As the construction industry continues to grow, a blend of traditional and hybrid dispute resolution methods, CDR techniques, and advanced technologies will likely be necessary to manage modern, complex, and international projects. It is advisable for regulators, legal professionals, and industry stakeholders to continually update ADR mechanisms to better address contemporary construction challenges, thereby improving efficiency, fairness, and relevance.

4.4 SLR Conclusion and Recommendation

The success of any construction project largely depends on Alternative Dispute Resolution (ADR). While various methods can be effective, their success depends on procedural efficiency, costs, stakeholder relationships, and overall project complexity. The construction industry is continually evolving, and this research examines the steps toward ADR, its key dynamics, the

challenges faced, and emerging solutions to address these issues. Recent studies indicate that arbitration, often viewed as an inexpensive alternative to litigation, may not always be cost-effective. Evidence shows that arbitration can be as costly and resource-intensive as litigation, especially when procedural inefficiencies and arbitrator expertise are lacking (Gebken & Gibson, 2006; Stipanowich, 1996). These concerns about arbitration's effectiveness in resolving complex, high-stakes construction disputes cast doubt on its cost efficiency.

Similarly, Dispute Resolution Boards (DRBs) have become a popular hybrid dispute resolution method because they can address issues as they arise. Although DRBs are generally seen as less confrontational than arbitration or litigation, the literature highlights their shortcomings, particularly in consistency, administrative efficiency, and cost unpredictability (Agdas & Ellis, 2013; Besaiso, Fenn, & Emsley, 2018). Like most DRB types, their effectiveness relies on the expertise and impartiality of the board members. Decision-making differences during project execution usually stem from the board's diverse composition, including members' experience levels. Additionally, while DRBs can reduce disputes during a project, evaluating their benefits and costs depends heavily on the project's specific timing and characteristics.

Due to the limited scope of DRBs and arbitration, there is growing demand for hybrid dispute resolution systems that effectively combine different dispute resolution methods. Numerous studies express optimism about hybrid ADR models, particularly their capacity to adapt various dispute-solving approaches to specific project goals (Lee, Yiu & Cheung, 2016; Kandel, Eid & Elhakeem, 2023). These hybrid systems can combine mediation and adjudication for minor disputes, reserving arbitration for more complex issues. This approach helps reduce costs and prevent delays. Incorporating multiple procedural strategies in hybrid systems is likely to transform dispute resolution processes, enabling a flexible approach that is not limited to a single ADR method.

To enhance the effectiveness of ADR strategies in construction, stakeholders should consider integrating hybrid ADR models into contracts. These hybrid clauses define the scope of disputes for which resolution methods are cost-effective and efficient, using arbitration or litigation as appropriate. Construction contracts should also establish a multi-tiered dispute resolution process, starting with mediation and adjudication at lower levels and reserving arbitration for highly complex issues. Research indicates that SCLAIMS can improve dispute resolution efficiency by reducing the time and resources needed, as shown by Kandel, Eid, & Elhakeem (2023).

Alongside these advancements, it is equally important to ensure that arbitrators and DRB members receive adequate training and accreditation. The effective operation of arbitration and DRBs largely depends on the facilitators' competence, neutrality, and efficiency. Enhancing credentialing standards for ADR practitioners is essential to ensure they have the necessary education and experience for effective dispute resolution. Additionally, developing continuous professional development programs can help improve the consistency and procedural effectiveness of decisions. Research indicates that arbitration practitioners with different levels of experience in DRs often issue varying awards and decisions. These findings underscore the importance of proper training and accreditation to enhance the quality of dispute resolution (Besaiso, Fenn, & Emsley, 2018).

For instance, integrating AI technology and Online Dispute Resolution (ODR) can make ADR processes more cost-effective and faster. Ojiako et al. (2018) observed that ODR platforms could simplify the resolution of international peripheral boundary jurisdiction disputes at lower cost. Similarly, McGinnis and Pearce (2014) argue that introducing OAI will automate routine arbitration tasks, such as document review, case projections, and procedural checks, thereby reducing costs and time. Despite these advantages, pressing issues concerning regulatory acceptance, data security, and procedural fairness require immediate attention. Consequently, additional research

and policy development are essential to facilitate the widespread adoption of these innovative, technology-based ADR methods.

Differences in ADR practices could be addressed through greater regulatory standardization and harmonization. Given the international nature of many major construction projects, variation in ADR systems across jurisdictions complicates dispute resolution. Implementing systematic licensure procedures for ADR practitioners can improve the efficiency of arbitration, mediation, and adjudication across regions. CRC Thi Hoa and Hoang Tu Linh (2023) contend that these initiatives will attract international contractors, who will trust the credible processes established for resolving disputes. Additionally, legal frameworks should include measures to regulate the enforceability of ADR decisions, ensuring that resolutions are recognized and respected across jurisdictions.

As a final recommendation, advanced dispute resolution systems should be integrated. To prevent costly disputes, sectors like construction should adopt proactive measures, including regular risk assessments, mediation before signing contracts, and improved communication with relevant stakeholders. Many construction disputes stem from miscommunication, vague contract terms, or risks that are neither clearly defined nor detailed, as noted by Gregory-Stevens, Frame, and Henjeweale (2016). Proactively using risk management models can simplify work for construction companies by reducing the need for formal dispute resolution. Incorporating these measures into dispute review processes can help parties identify and articulate issues early, which can serve as triggers for conflict escalation and strengthen working relationships throughout the project lifecycle.

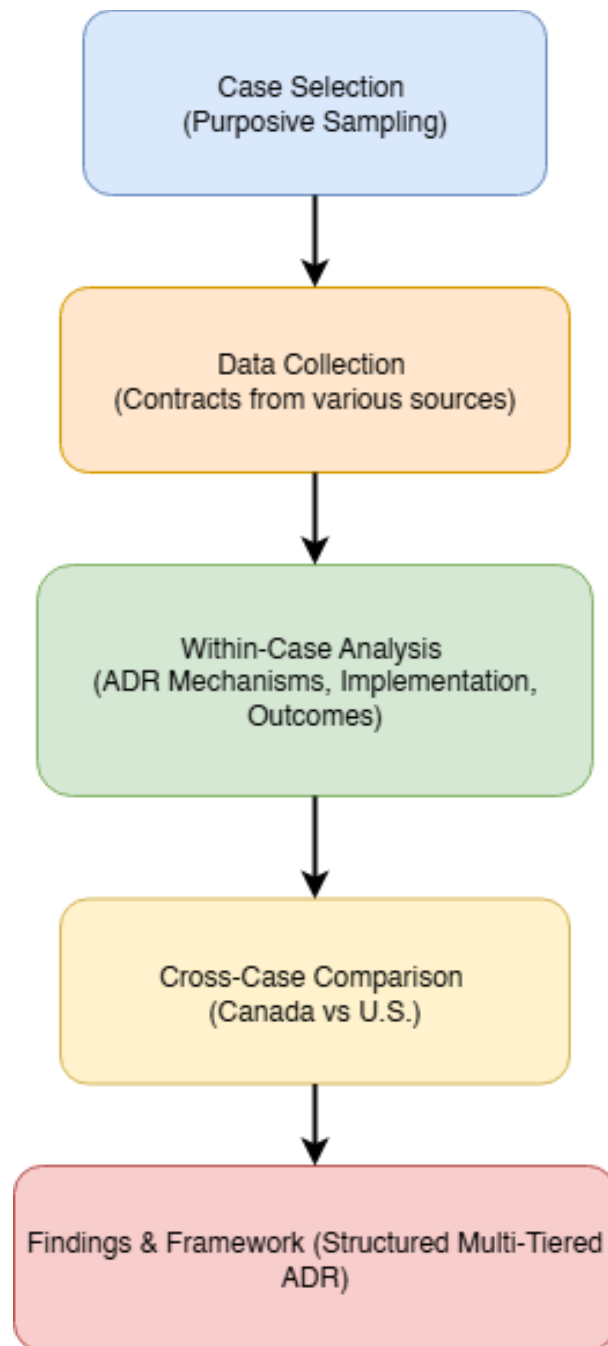
The future of ADR in construction hinges on advances in adaptive, integrated, and technology-driven dispute resolution. While arbitration, DRBs, and other traditional methods remain vital, their limitations underscore the need for broader, more flexible strategies that support nondiscretionary approaches. The construction industry can benefit from adopting hybrid models, improving training for ADR practitioners, leveraging digital technologies, aligning with regulations,

and prioritizing dispute prevention. As construction projects grow larger and more complex, developing and refining ADR methods will be crucial to resolving disputes effectively, reducing delays, and fostering better cooperation among stakeholders.

CHAPTER 5 ADR CASE STUDY

This phase uses a comparative case study method to examine how multi-tiered alternative dispute resolution (ADR) mechanisms are organized and applied in public-private partnership (P3) projects across Canada and the U.S. This approach provides a detailed understanding of how contractual dispute resolution clauses develop and are used, enabling comparisons across projects. The research draws on document analysis and systematic comparisons of ADR clauses in project agreements (Abdel Aziz, 2021), with a focus on transportation infrastructure projects delivered through the P3 model. Data primarily consists of ADR clauses from contract documents of ten major U.S. and ten Canadian P3 infrastructure projects, including agreements, dispute protocols, and legal provisions obtained from project and state websites. Purposive sampling targeted projects of varying sizes that feature structured ADR processes and follow the DBFOM P3 model. Sampling continued until thematic saturation was achieved, ensuring a thorough understanding of ADR mechanisms. The analysis involved two phases: first, a within-case review of each project to document the structure, use, and dispute outcomes of ADR clauses; second, a cross-case comparison to identify patterns within and between Canadian and U.S. projects. Figure 8 shows the flow diagram of the case study process.

Figure 10 Case Study Methodology Flow Diagram



Reliability was enhanced by triangulating various data sources such as contracts, reports, and scholarship. Validity was strengthened through cross-jurisdictional comparison, confirming that the results were not limited to a single institutional setting.

5.1 Analytical Framework for the Case Study

Chapter 14's systematic literature review identified common dimensions along which alternative dispute resolution (ADR) provisions in construction and P3 contracts vary, and these dimensions are used to evaluate their structure and effectiveness. These dimensions emerged from both the content analysis in Section 14.2 and the bibliometric co-occurrence clusters in Section 14.1, forming the framework for this case study. Using these dimensions ensures that each of the twenty agreements is assessed against the same set of criteria, enabling meaningful comparisons between cases rather than isolated summaries of individual features.

The case study methodology, outlined in the flow diagram in Figure 9, involved two main analytical steps. First, each agreement was analyzed individually to extract and record its dispute-resolution provisions according to the parameters below; these within-case records are shown in the project-level process tables accompanying each case (e.g., Table 4 for the Elizabeth River Tunnels Project). Second, the data were combined into a cross-case comparison matrix (Table 25), documenting the presence and configuration of each ADR mechanism across all twenty projects and providing the foundation for the comparative analysis and discussion in Section 15.4. Data collection focused on the following parameters for each agreement:

5.1.1 ADR methods employed

The specific dispute-resolution mechanisms provided for in the contract — negotiation, steering committee or executive negotiation, mediation, Dispute Review Board, disputes board, independent certifier, expert determination, adjudication, referee, arbitration, administrative hearing, and litigation — and whether they are arranged in a single-step or multi-tiered sequence.

5.1.2 Tier structure and sequencing

The number and sequence of escalation tiers, the criteria for moving a dispute from one tier to the next, and whether advancing through the sequence is required or optional.

5.1.3 Binding status of each step

Whether each mechanism produces a binding, non-binding, interim-binding, or admissible outcome, since this determines the enforceability and finality of the resolution at each tier.

5.1.4 Dispute Review Board structure and composition

Whether a DRB or an equivalent panel is provided; the timing of its constitution (standing from project mobilization versus ad hoc convening upon a formal dispute); the number, qualifications, and method of selection of its members; and whether its determinations are binding, non-binding, or admissible in later proceedings.

5.1.5 Resolution timelines

The timeframes specified at each tier for notice, response, hearing, and resolution — for example, the ten-day project-level negotiation and the seven-day Steering Committee window observed in several U.S. agreements — and whether those timeframes are fixed or subject to extension.

5.1.6 Dispute-triggering events

The categories of events the contract anticipates as giving rise to disputes, including differing site conditions, scope changes, delay, payment, change orders, utility and right-of-way issues, and force majeure, together with the point at which such events are channeled into the formal ADR process.

5.1.7 Final resolution mechanism

The terminal binding step, whether arbitration or litigation, and any jurisdiction-specific constraints, such as statutory limitations on binding arbitration for public entities that require litigation as the final tier.

5.1.8 Jurisdictional and procedural features

Project or jurisdiction-specific provisions, such as independent certifiers, administrative hearing processes (e.g., the Texas State Office of Administrative Hearings), or standardized provincial frameworks, set an agreement apart from the usual pattern and reflect the impact of the governing legal regime.

Table 25 links each parameter to the data collected from all agreements and the theme identified in the systematic literature review. It clearly shows the connection between the literature review in Chapter 14 and the case study evidence discussed here.

Table 4 Analytical framework for the case study: parameters, data collected, and originating SLR themes

Parameter	Data collected from each agreement
ADR methods employed	The specific dispute-resolution mechanisms provided for in the agreement — negotiation, steering committee / executive negotiation, mediation, Dispute Review Board, disputes board, independent certifier, expert determination, adjudication, referee, arbitration, administrative hearing, and litigation.
Tier structure and sequencing	The number and order of escalation tiers, whether the sequence is single-step or multi-tiered, and whether progression through tiers is mandatory or permissive.
Binding status of each step	Whether each mechanism produces a binding, non-binding, interim-binding, or admissible outcome.
DRB structure and composition	Whether a Dispute Review Board or equivalent panel is provided for; its timing (standing from mobilization versus ad hoc); the number, qualifications, and selection of its members; and the binding or advisory nature of its determinations.
Resolution timelines	The timeframes specified at each tier for notice, response, hearing, and resolution, and whether those timeframes are fixed or extendable.
Dispute-triggering events	The categories of events the agreement anticipates as giving rise to disputes — differing site conditions, scope changes, delay, payment,

	change orders, utility and right-of-way issues, and force majeure — and the point at which they enter the ADR process.
Final resolution mechanism	The terminal binding step (arbitration or litigation) and any jurisdiction-specific constraints, such as statutory limitations on binding arbitration for public entities.
Jurisdictional and procedural features	Project- or jurisdiction-specific provisions — independent certifiers, administrative hearing processes (e.g., SOAH), or standardized provincial frameworks — that distinguish the agreement from the general pattern.

Using this common framework for both the U.S. and Canadian samples allows the subsequent comparative analysis to go beyond mere description and move toward explanation. It highlights not only how the ADR provisions differ but also why these differences stem from the unique institutional and statutory contexts of each jurisdiction. The following sections first apply the framework to the ten U.S. projects (Section 15.2), then to the ten Canadian projects (Section 15.3). Finally, the cross-case analysis and discussion synthesize the findings from both samples in Section 15.4.

5.2 US Case Studies

This section provides a detailed overview of selected Public-Private Partnership (P3) projects in the U.S., specifically examining multitiered Alternative Dispute Resolution (ADR) strategies. It draws on a diverse set of U.S. cases, primarily large transportation projects carried out under DBFOM arrangements, with access to comprehensive contract and project documentation. These cases span multiple jurisdictions and involve private consortium ownership, covering both construction and long-term operations and maintenance (O&M). The listed projects form the empirical basis for our cross-case analysis.

1. Elizabeth River Tunnels, Virginia
2. SH 130, Texas
3. SH 288, Texas

4. Purple Line, Maryland
5. I-95/395 HOV/HOT Lanes, Virginia
6. Central 70, Colorado
7. North Tarrant Express, Texas
8. Puerto Rico PR-22 and PR-5, Puerto Rico
9. Ohio River Bridges — East End Crossing, Kentucky
10. I-595 Corridor Roadway Improvements, Florida

The table below summarizes ten U.S. P3 projects analyzed in this study, detailing project type, jurisdiction, delivery method, total cost, concession or term length, and main scope and participants. The sample was chosen to reflect the variety of long-term concession agreements in the U.S. surface-transportation sector, covering seven jurisdictions: Virginia, Texas, Maryland, Colorado, Florida, Puerto Rico, and the Kentucky–Indiana border. Most projects are highway developments involving tolls or managed lanes, but the sample also includes a tunnels project (Elizabeth River Tunnels), a major bridge crossing (Ohio River Bridges – East End Crossing), and a light-rail transit project (the Purple Line), ensuring a diverse asset representation. Project costs range from about \$922 million to \$2.6 billion, and concession durations from 30 to 76 years, indicating their long-term nature. Nine projects employ a design-build-finance-operate-maintain (DBFOM) framework, with payment mechanisms including toll concessions and availability payments. The Puerto Rico PR-22 and PR-5 project uses a brownfield lease concession, representing the operations-and-maintenance model. The upcoming sections analyze each project's dispute-resolution provisions based on the parameters outlined in Section 15.1, culminating in a cross-case analysis highlighting common patterns across the sample.

Table 5 Overview of U.S. P3 Case Study Projects

Project (abbrev.)	Type	Jurisdiction	P3 model	Total cost	Duration / concession	Key features & parties
ERT — Elizabeth River Tunnels	Tunnels / highway	Virginia	DBFOM (toll concession)	\$2.1 B	Initiated 2012; 50-year concession	New Midtown Tunnel; rehab of Midtown & Downtown Tunnels; MLK Freeway extension. Owner: VDOT; Concessionaire: Elizabeth River Crossings.
SH 130 — Segments 5–6	Highway (toll road)	Texas	DBFOM (toll concession)	\$1.35 B	Launched 2009; term not stated	91-mile toll road; alternative to I-35, Austin. Owner: TxDOT; Concessionaire: SH 130 Concession Company.
SH 288 — Toll Lanes	Highway (toll lanes)	Texas	DBFOM (toll concession)	\$1.06 B	Launched 2016; 52-year concession	10.3-mi tolled lanes, downtown Houston–Brazoria Co. Owner: TxDOT; Concessionaire: Blueridge Transportation Group.
Purple Line	Transit (LRT)	Maryland	DBFOM (availability payment)	\$2.6 B	36-year concession	16-mi light rail, 21 stations, DC/Central MD. Owner: MDOT / MTA; Concessionaire: Purple Line Transit Partners.
I-95/395 — HOV/HOT Lanes	Highway (managed lanes)	Virginia	DBFOM (toll concession)	\$922 M	76-yr concession	29.4-mi HOV/HOT lanes, Northern Virginia. Owner: VDOT; Concessionaire: 95 Express Lanes LLC.
Central 70	Highway	Colorado	DBFOM	\$1.2 B	30-year concession	10-mi I-70 reconstruction + express toll lanes, Denver. Owner: CDOT; Concessionaire: Kiewit / Meridiam.

NTE — North Tarrant Express (I-820, SH 121/183 Seg. 1 & 2W)	Highway (managed lanes)	Texas	DBFOM (toll concession)	\$2.1 B	52-year concession	Expansion to six main lanes + four TEXpress lanes, Dallas–Fort Worth. Owner: TxDOT; Concessionaire: NTE Mobility Partners.
PR-22 & PR-5	Highway (brownfield toll)	Puerto Rico	Lease concession (O&M)	\$1.4 B	50-yr lease concession	Upgrade & O&M of PR-22 and PR-5 toll highways. Owner: PR Highways & Transp. Authority; Concessionaire: Metropistas.
ORB-EEC — Ohio River Bridges, East End Crossing	Bridge / mixed	Kentucky & Indiana	DBFOM (availability payment)	\$1.32 B	39-yr (4 constr. + 35 O&M); to 2052	2,500-ft cable-stayed bridge, 1,680-ft tunnel, I-265 extensions. Concessionaire: WVB East End Partners.
I-595 — Corridor Roadway Improvements	Highway (express lanes)	Florida	DBFOM (availability payment)	\$1.83 B	35-yr concession; to 2044	10.5-mi corridor, 3 reversible express toll lanes; first U.S. availability-payment transport P3. Owner: FDOT; Concessionaire: I-595 Express.

5.2.1 Elizabeth River Tunnels Project

The Elizabeth River Tunnels (ERT) Project, a \$2.1 billion public-private partnership (P3) initiated in 2012, sought to reduce persistent congestion and upgrade aging infrastructure in Norfolk and Portsmouth, Virginia. It included constructing a new Midtown Tunnel, rehabilitating the existing Midtown and Downtown Tunnels, and extending the Martin Luther King Freeway (FHWA, 2011). The Virginia Department of Transportation (VDOT) served as the public owner, while Elizabeth River Crossings Opco, LLC (ERC), a consortium comprising Skanska Infrastructure Development, Macquarie Financial Holdings, Albertis, and John Hancock, served as the concessionaire. The design-build joint venture comprised Skanska USA Civil Southeast, Kiewit Construction Company, and Weeks Marine (FHWA, 2011). The project used a design-build-finance-operate-maintain (DBFOM) agreement.

Dispute resolution for the project was guided by Article 21 of the Elizabeth River Tunnels Comprehensive Agreement, which outlines a multi-level ADR process emphasizing early negotiation and structured escalation (VDOT & ERC, 2011). Under Section 21.01(a), initial disputes should be resolved through good-faith negotiations at the project level. If not settled within ten days, the disputes would escalate to the Steering Committee, which must convene within ten days of notification and issue a decision within seven days.

If the Steering Committee cannot resolve the issue, the contract allows either party to pursue non-binding mediation as detailed in Exhibit Z. Each party must nominate a mediator within seven days, and appointments are expected within fourteen days. Mediation should begin within thirty days and typically lasts one day, but it may be extended if both parties agree. If mediation fails after sixty days, the parties may escalate the dispute to the Technical Requirements (TR) Dispute Panel (VDOT & ERC, 2011).

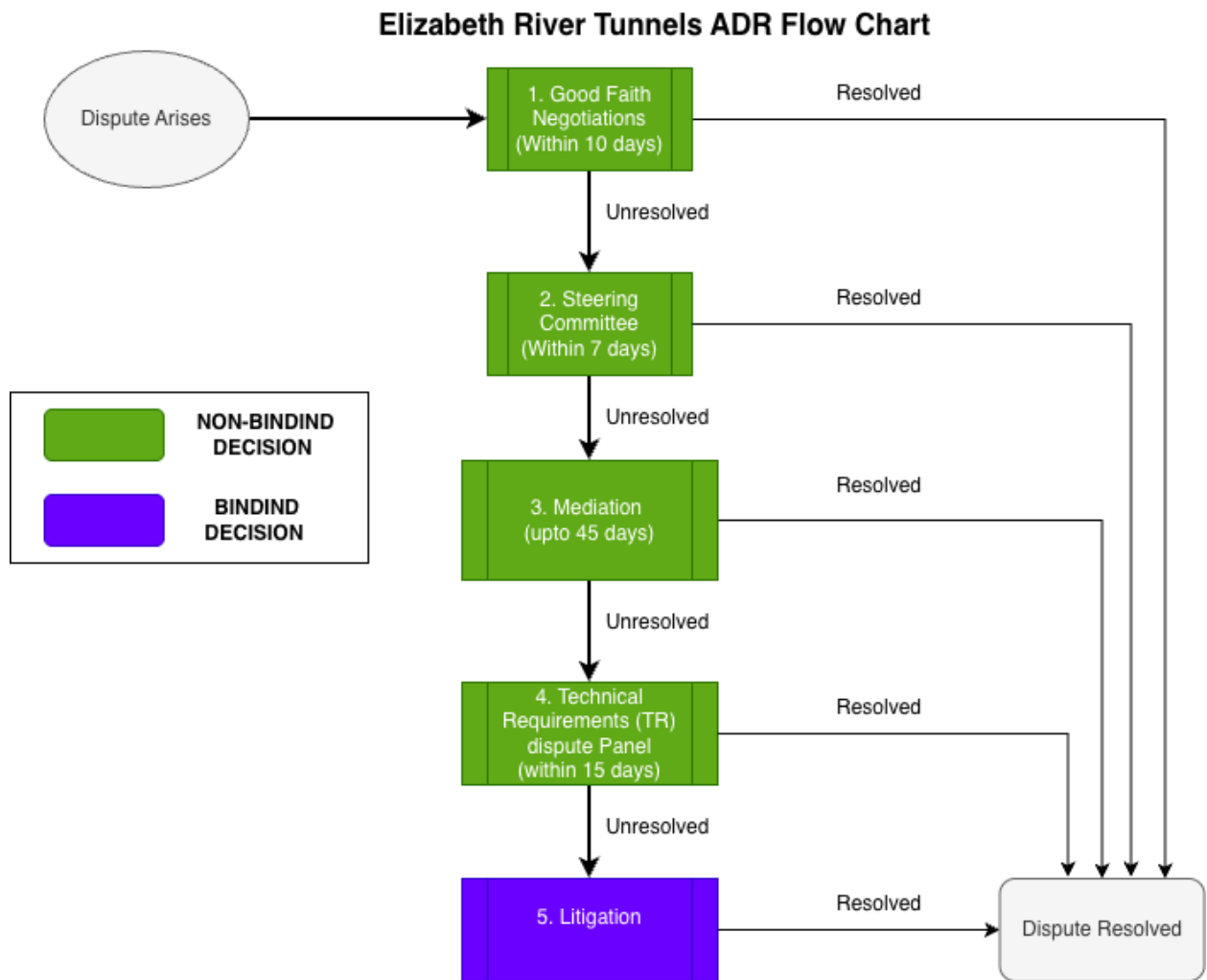
The TR Dispute Panel served as a neutral body specialized in resolving technical disputes, requiring both parties to submit factual statements, relief requests, and supporting documents. A pre-hearing conference was conducted within five days, and a non-binding decision was provided within fourteen days after the hearing. If unresolved, either party could pursue judicial resolution in the Circuit Court for the City of Richmond, Virginia (VDOT & ERC, 2011).

Table 6 showing the Elizabeth River Tunnels Project Dispute Resolution Process

DR Method	Process
Negotiations	The parties will try to resolve any Disputes arising from the contract at the Project level through good-faith negotiations between authorized delegates.
Steering Committee	If the dispute cannot be addressed at good-faith negotiations between designated representatives, either party may refer the dispute to the Steering Committee for determination. The Steering Committee will hold a meeting within ten days after receiving notification from either side of any outstanding Dispute. The Steering Committee will have seven days to address the dispute following the meeting.
Mediation (Non-binding)	If the Steering Committee fails to resolve, parties may request non-binding mediation. Any party desiring to commence mediation will provide written notification to the other party. Within seven (7) days of receiving the notice, each party will nominate a Mediator Candidate from the list to resolve the dispute. Within thirty days after the mediator's appointment, the parties are scheduled for a one-day mediation session. If the mediation process successfully settles the disagreement, the parties will swiftly take action to

	execute the decision.If mediation does not resolve the issue after 60 days, the parties will seek dispute resolution through the TR panel or litigation.
TR Panel (Non-binding)	The concessionaire will provide the Department with a statement that includes a brief synopsis of the TR Dispute's nature and background, pertinent facts, issues to be decided, a statement of the relief, and copies of any Project Agreements, documents, and records. The Department will then, within ten (10) days of receiving the submission, provide a responding statement that summarizes the TR Dispute's nature and background, pertinent facts, issues to be decided, and the extent to which it disagrees with the concessionaire's statement. Within five (5) days of being appointed, the TR Dispute Panel will hold a telephone prehearing conference to explore matters, avoiding clarification of the TR Dispute and requested remedy with representatives of the parties. After receiving all the data and documents it deems necessary to resolve the TR Dispute, the TR Dispute Panel will adjourn the hearing to decide.
Litigation (Binding)	Either party may pursue legal action if the mediation did not solve the dispute, or if the TR Dispute has not been settled within 60 days of the TR Dispute Decision being issued, or if the TR Dispute Panel does not issue a TR Dispute Decision within 14 days following the conclusion of the TR Dispute Panel hearing.The dispute will be held and determined in court.

Figure 11 Summary Chart of the Elizabeth River Tunnels Dispute Resolution Process



5.2.2 SH 130 Segments 5-6

The SH 130 Segments 5–6 project was a \$1.35 billion public–private partnership (P3) launched in 2009 to build a toll road through Austin, Texas. Developed collaboratively by the Texas Department of Transportation (TxDOT) and the SH 130 Concession Company, LLC, it connects to the northern SH 130 segments, providing a 91-mile alternative to the busy I-35 corridor in Central Texas (TxDOT, 2007).

The Facility Concession Agreement (Article 17.8) outlined the project’s governance and dispute resolution procedures, which involve a multi-stage ADR process prioritizing early informal

settlement before escalation. Initially, disputes are to be resolved through informal procedures that require written notice and certification by the claimant's authorized representative. The respondent then provides a written response, and the designated representatives of both parties must meet within five business days to document any resolution in writing (TxDOT, 2007).

If the dispute remained unresolved, it would be escalated to direct negotiations between the Developer's Chief Executive Officer and the TxDOT Executive Director (or Assistant Executive Director). These negotiations were to start within 10 business days of notice and conclude within the next 10 days. Any agreements made at this stage were to be documented in written form, like change orders.

Unresolved disputes would be directed to a Disputes Board, which would render a binding decision within the timelines specified by the Dispute Resolution Procedures (DRP)—typically 15 days for regular cases and seven days for Fast-Track Disputes. The Board's decision was final, conclusive, and enforceable unless there were grounds for appeal (TxDOT, 2007). Either party could appeal by requesting a formal administrative hearing through the State Office of Administrative Hearings (SOAH) within ten business days. An Administrative Law Judge (ALJ) would examine whether the appeal grounds—such as jurisdictional issues, procedural faults, or member misconduct—impacted the Board's decision. The TxDOT Executive Director would then issue a final order within 28 days of receiving the ALJ's proposed ruling, either affirming, remanding, or vacating the Disputes Board's decision.

The Developer and TxDOT can mutually agree to participate in mediation or another ADR process at any point. The mediation was anticipated to last up to 30 days, with costs shared equally. If no resolution was reached, either party could withdraw after 31 days.

This structure outlines a comprehensive hybrid ADR system that integrates informal settlement, executive negotiation, expert adjudication, and optional mediation. It highlights how

U.S. P3 highway projects employ tiered, binding, and administrative dispute resolution to manage complex contractual relationships, ensuring both project progress and accountability.

The Facility Concession Agreement (Article 17.8) outlined how the project would be governed and resolved disputes, emphasizing a layered ADR process that favors early informal resolution before escalation. Disputes were first to be handled through informal steps, requiring a written notice and certification from the claimant's authorized representative. The respondent would then reply in writing, and within five business days, designated representatives from both parties needed to meet to formalize the resolution in writing (TxDOT, 2007).

If the dispute remained unresolved, it was escalated to executive negotiations between the Developer's CEO and the TxDOT Executive Director (or Assistant Executive Director). These negotiations were to begin within 10 business days of notice and be completed within the next 10 days. Any agreements reached during this stage were documented in writing, such as change orders.

Unresolved disputes were submitted to a Disputes Board, which then delivered a binding decision within the timeframes set by the Dispute Resolution Procedures (DRP)—usually 15 days for standard cases and seven days for Fast-Track Disputes. This decision was final, conclusive, and enforceable unless there were valid grounds for appeal (TxDOT, 2007). Either party could appeal by requesting a formal administrative hearing with the State Office of Administrative Hearings (SOAH) within ten business days. An Administrative Law Judge (ALJ) would evaluate whether the grounds for appeal—such as jurisdictional issues, procedural mistakes, or member misconduct—impacted the Board's decision. The TxDOT Executive Director ultimately issued a final order within 28 days after receiving the ALJ's proposed decision, either confirming, remanding, or nullifying the Disputes Board's determination.

Both the Developer and TxDOT may agree at any time to engage in mediation or another form of alternative dispute resolution (ADR). The mediation process typically concludes within 30 days,

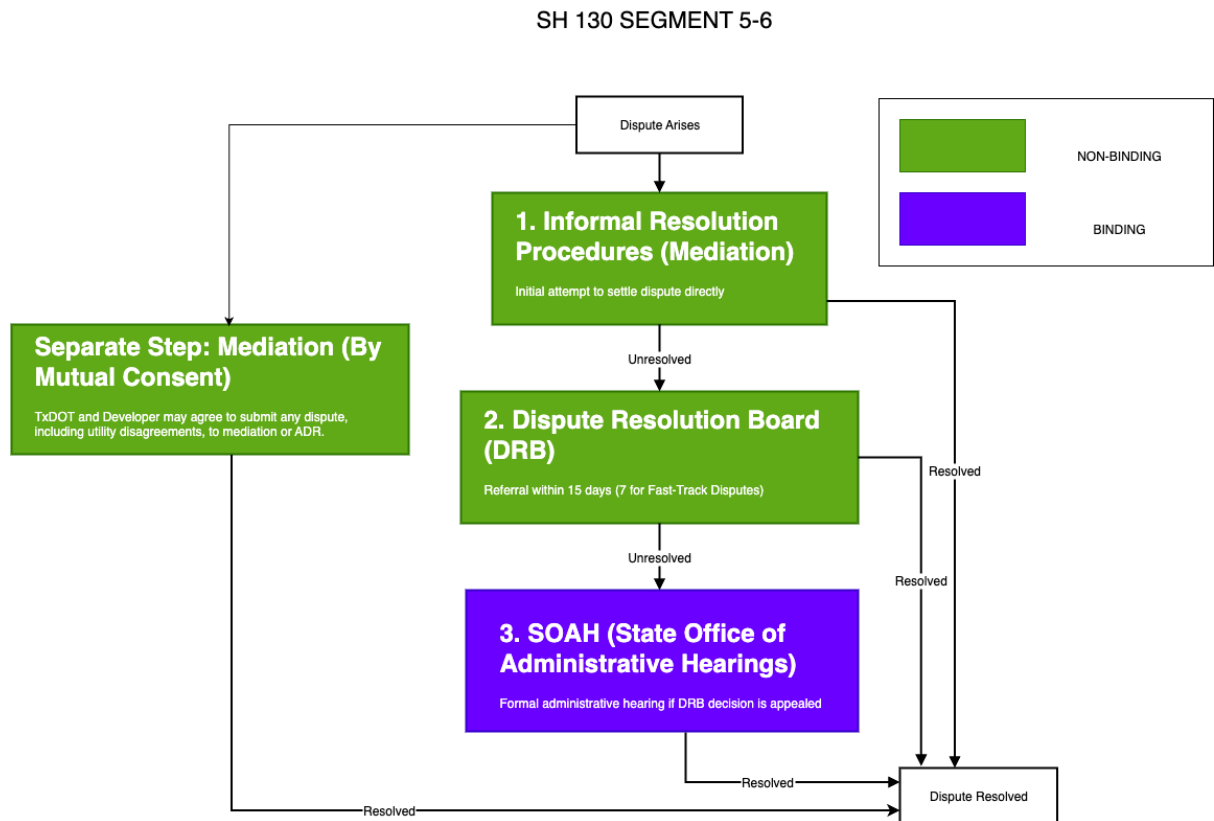
with costs split equally between the parties. If no resolution is reached, either party may withdraw from the process after 31 days.

Table 7 SH 130 (Segments 5-6) Dispute Resolution Process

Steps	Dispute Resolution	Process
Step 1	Informal Resolution Procedures	The claiming party must first use the informal settlement procedures to try to settle the dispute directly with the replying party.
Step 2	Dispute resolution board	After the last period under the Informal determination Proceedings has ended, either party may serve written notice on the other party within 15 days (seven days for Fast-Track Disputes) to refer the issue to the Disputes Board for determination.
Step 3	SOAH (State Office of Administrative Hearings)	One party may ask the Executive Director to request a formal administrative hearing before the State Office of Administrative Hearings ("SOAH") if the party feels that the grounds for appeal impacted a Disputes Board decision.
Separate Step	Mediation	By mutual consent, TxDOT and the developer may submit a dispute (including any disagreement with a utility owner regarding a

		utility adjustment) to mediation or another alternative dispute resolution procedure.
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Figure 12 Summary Chart of the SH 130 Segment 5-6 Dispute Resolution Process



5.2.3 SH 288 Toll Lanes Project

The SH 288 Toll Lanes Project, a \$1.06 billion public–private partnership (P3) launched in 2016, aimed to enhance mobility and alleviate congestion between downtown Houston and Brazoria County, Texas (FHWA, 2016). The Texas Department of Transportation (TxDOT) served as the public partner, while the concessionaire was the Blueridge Transportation Group, LLC—a consortium of ACS Infrastructure Development, InfraRed Capital Partners, Shikun & Binui Concessions, Northleaf Capital Partners, Clal Insurance Enterprises Holdings Ltd., and Star America Infrastructure Partners. Alameda-Genoa Constructors, a design-build joint venture, handled the design. The project

comprised four tolled lanes covering 10.3 miles from US 59/69 to the Harris–Brazoria County line, offering an alternative route to the congested SH 288 corridor.

Dispute resolution for the project was governed by Article 30 of the Comprehensive Development Agreement for State Highway 288 Toll Lanes in Harris County. It established a multi-level ADR system aimed at resolving issues early before escalation (TxDOT & Blueridge Transportation Group, 2016). According to the Informal Resolution Procedures, the claiming party began the process by sending written notice to the designated agent of the opposing party. Both parties' Chief Executive Officers (or equivalent) and the TxDOT Executive Director needed to meet in good faith to try and resolve the dispute. If they reached a settlement at this stage, the resolution was documented and quickly put into effect.

If informal negotiations failed, the parties could agree to mediation to pursue a facilitated settlement. Mediation was voluntary, capped at 30 days, and either party could end it after the 31st day if no agreement was reached.

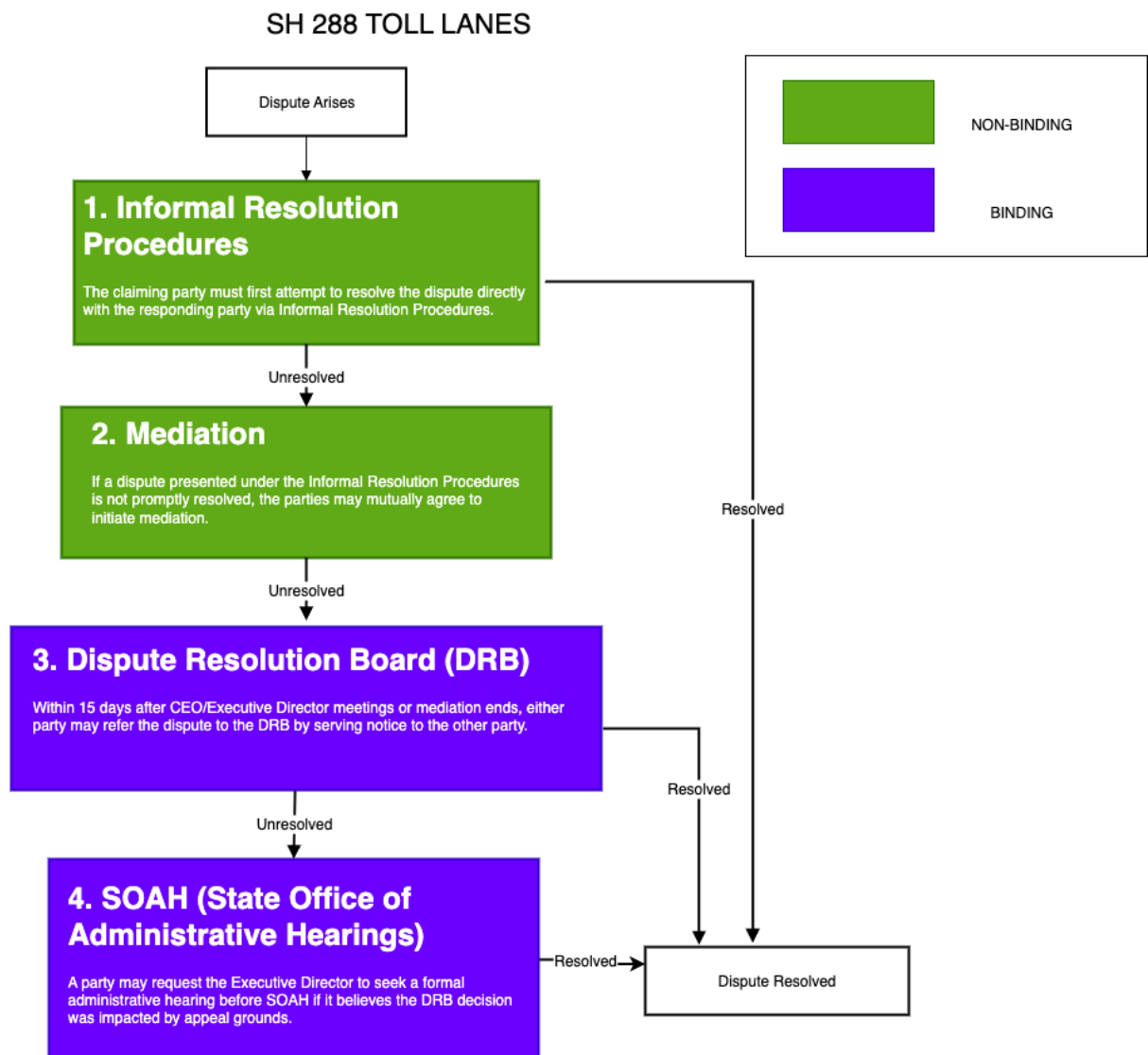
When mediation or informal procedures failed, disputes could be escalated to the Disputes Board. Either party could refer a matter within 15 days of the conclusion of mediation or executive meetings. The responding party was required to issue a certified written response within 15 days, and the Disputes Board had to issue a written decision within 20 days of the final hearing. The Board's decision was intended to be binding unless grounds for appeal were established.

Appeals followed the same administrative process as in SH 130, allowing either party to request a review by the State Office of Administrative Hearings (SOAH) if they claimed procedural or jurisdictional errors. The Administrative Law Judge (ALJ) reviewed the case and submitted a proposal for decision to the TxDOT Executive Director, who then issued a final order within 28 days. Based on the findings, the Executive Director could uphold, remand, or vacate the Disputes Board decision. If no final order was issued within 28 days, the ALJ's proposal automatically became the final order.

Table 8 SH 288 Toll Lanes Project Dispute Resolution Process

Steps	Dispute Resolution	Process
Step 1	Informal Resolution Procedures	The party intending to pursue the dispute (the "claiming Party") must first attempt to resolve the dispute directly with the opposing party (the "responding Party") via the Informal Resolution Procedures.
Step 2	Mediation	If a dispute is presented to the Informal Resolution Procedures but is not promptly resolved, the parties may mutually agree to start mediation.
Step 3	Dispute resolution board	Within 15 days after the end of the CEO / Executive Director meetings or the end of any mediation, either party may refer a Dispute to the Disputes Board for resolution by serving notice to the other party.
Step 4	SOAH (State Office of Administrative Hearings)	One party may ask the Executive Director to request a formal administrative hearing before the State Office of Administrative Hearings ("SOAH") if the party feels that the grounds for appeal impacted a Disputes Board decision.

Figure 13 Summary Chart of the SH 288 Toll Lanes Dispute Resolution Process



5.2.4 Purple Line, Maryland

The Purple Line Project is a \$2.6 billion light-rail development serving the Washington, DC, Metro Area and Central Maryland. This public-private partnership involves the Maryland Department of Transportation (MDOT), the Maryland Transit Administration (MTA), and Purple Line Transit Partners, LLC (PLTP). It features a 16-mile route with 21 stations, connecting key Maryland locations such as Bethesda in Montgomery County and New Carrollton in Prince George's County. Its main goal is to reduce traffic congestion and improve mobility in transit-dependent communities by

providing an east-west transit option that complements the north-south lines of Metrorail and MARC. The project is carried out using a Design-Build-Finance-Operate-Maintain model via an Availability Payment Concession.

The project contract details are specified in the Public-Private Partnership Agreement for the Purple Line Project, which involves the Maryland Department of Transportation, the Maryland Transit Administration, and Purple Line Transit Partners LLC. Dispute resolution procedures are outlined in Article 20 of the contract (MDOT et al., 2016).

The Parties will establish a Technical Dispute Resolution Board (DRB) for technical issues and a Financial DRB for financial concerns throughout the agreement's duration. Depending on the dispute's nature, it may be referred to a single DRB, both DRBs, or addressed in a joint session. Each Party can submit written evidence and has the opportunity to respond to the other's evidence, including participating in a hearing if called by the DRB. The DRB will deliver its judgment within 60 days, accompanied by an explanation of its reasoning. This decision is non-binding and, unless both Parties agree in writing otherwise, will not be admissible in any legal proceedings.

A claim should be submitted to the Contracting Officer or their Authorized Representative for review. To initiate the process for monetary compensation or a time extension, the concessionaire must send a Notice of Claim within 30 days of discovering, or reasonably should have discovered, the grounds for the claim. The full claim must then be submitted within 90 days of the Notice of Claim, or within any extended period granted in writing by the Contracting Officer.

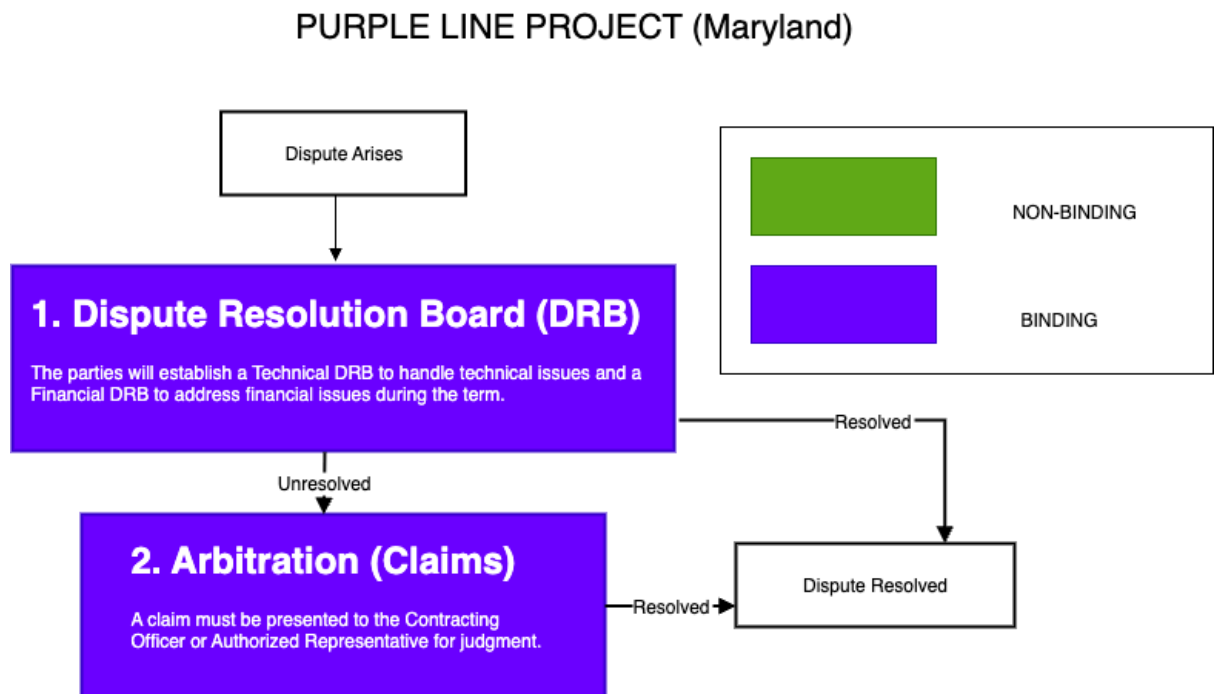
The Contracting Officer or their Authorized Representative will provide an initial decision on all Claims within 90 days of receiving the Concessionaire's Claim, unless the Parties agree on a different timeline. This decision will be communicated to the concessionaire via email, and a physical copy will be sent by certified mail with a return receipt requested, or through an alternative method that confirms delivery.

The concessionaire has 15 days from receipt of an Initial Decision to file an appeal to the MDOT Secretary or their designee. The appeal must briefly state the grounds for each claim, cite relevant Contract Document clauses, and specify the amount of financial relief sought. Unless the MDOT Secretary and the Parties agree otherwise, a decision will be issued within 180 days after the hearing or upon receipt of all necessary information. This decision is final for MDOT and is necessary before any judicial review of the Claim. Table 10 outlines the Purple Line Project Dispute Resolution Process.

Table 9 Purple Line Project Dispute Resolution Process

DRP	Procedure
Dispute Resolution Board	The Parties will establish a Technical DRB to handle technical issues and a Financial DRB to address financial issues during the term.
Arbitration (Claims)	A claim must be presented to the Contracting Officer or his or her Authorized Representative for judgment.

Figure 14 Summary Chart of the Purple Line Dispute Resolution Process



5.2.5 I-95/395 HOV/HOT Lanes, Virginia

The I-95/395 HOV/HOT Lanes Project is a \$922 million infrastructure initiative involving Fairfax, Prince William, and Stafford Counties in Virginia. It is a public-private partnership between the Virginia Department of Transportation (VDOT) and 95 Express Lanes LLC. The project covers the development, design, financing, construction, maintenance, and operation of 29.4 miles of HOV and HOT lanes along I-95 and I-395 in Northern Virginia, from Garrisonville Rd. in Stafford County to Edsall Rd. in Fairfax County, with a concession period of 76 years.

The dispute resolution provisions are detailed in Article 21 of the Third Amended and Restated Comprehensive Agreement. It specifies that “Through honest discussions between designated representatives, the parties will attempt to resolve any disputes arising from this agreement at the project level. The principles endorsed by all involved— including the Department, the concessionaire, the Design-Build Contractor, the TTMS Contractor, all subcontractors, and the

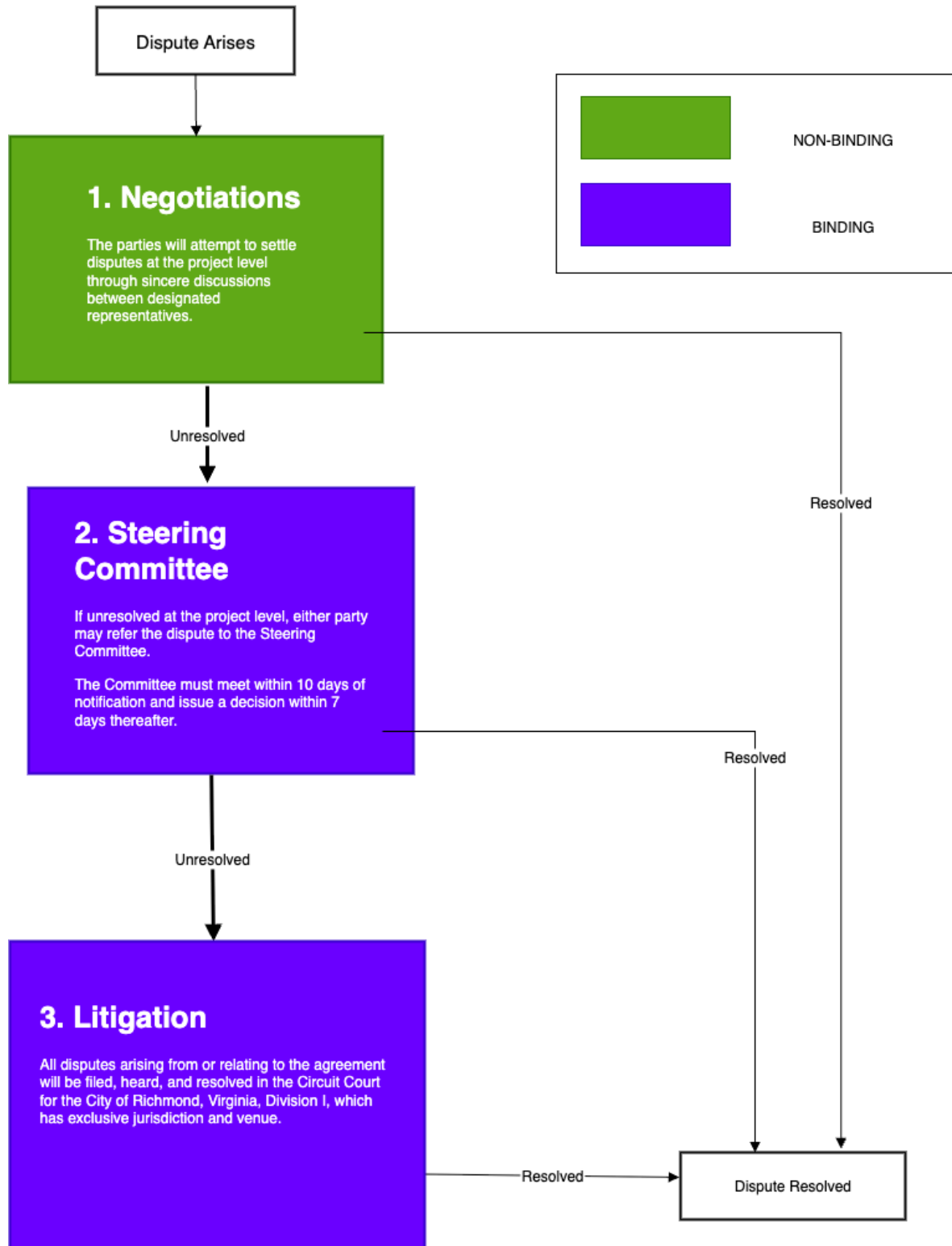
FHWA— emphasize fostering trust and open communication; addressing and resolving issues promptly at the lowest level by considering all perspectives and needs; sharing common goals while respecting individual goals and values; and promoting cooperation and teamwork to find better solutions for current and future issues. If disagreements persist after negotiations at the Project level, either party may escalate the matter to the Steering Committee, which will convene within ten days of notice. The committee then has seven days to attempt resolution. All disputes concerning this agreement or its breach are to be filed and resolved in the Circuit Court for the City of Richmond, Virginia, Division I, which has exclusive jurisdiction. Table 7 illustrates the dispute resolution process for the I-95/395 HOV/HOT Lanes Project.

Table 10 I-95/395 HOV/HOT Lanes Project Dispute Resolution Process

DRP	Process
Negotiations	The parties will try to settle disputes resulting from this agreement at the project level through sincere discussions between designated representatives.
Steering Committee	If the dispute cannot be addressed at the Project level through negotiations, either party may refer it to the Steering Committee for determination. The Steering Committee will hold a meeting within ten days after receiving notification from either side of any unresolved Dispute. Following the meeting, the Steering Committee will have seven days to address the dispute.
Litigation	All disputes between the parties arising from or relating to this agreement or its breach will be filed, heard, and resolved in the Circuit Court for the City of Richmond, Virginia, Division I, which will have exclusive jurisdiction and venue.

Figure 15 Summary Chart of the I-95/395 HOV/HOT Lanes Dispute Resolution Process

I-95/395 HOV/HOT Lanes Project – Virginia



5.2.6 Central 70, Colorado

The Central 70 Project was a \$1.2 billion highway upgrade in Denver, Colorado, carried out through a public-private partnership involving the Colorado Department of Transportation, Kiewit, and Meridiam Partners LLC. It included reconstructing ten miles of I-70 from I-25 to Chambers Road, completely rebuilding the section between Brighton Boulevard and I-270, expanding it from I-270 to Chambers Road, and restriping between I-25 and Brighton Boulevard. These enhancements increased capacity by adding one new express toll lane in each direction, with the possibility of a second lane between Brighton Boulevard and I-270 in the future. The project's goals were to cut travel time across the corridor by one-third to one-half by 2035, support growing populations, and improve safety by upgrading shoulders and interchanges to help prevent crashes.

The agreement states, “Before referring a dispute to the Dispute Resolution Panels, the parties must attempt to resolve it amicably. If they can agree on an amicable settlement, they must sign a written memorandum or similar document outlining the settlement terms in a format the enterprises will create. This document will be regarded as a legally binding settlement agreement. The Designated Senior Representatives will confer and make other reasonable efforts to resolve the dispute for at least 15 working days after being referred by either party. Following such a referral, if the parties reach a resolution, they must document it by signing a written memorandum or equivalent agreement in a format that the enterprises will produce, detailing the resolution; this document will be considered a legally binding settlement agreement. If the Designated Senior Representatives cannot resolve the dispute within 15 working days, either party may refer the matter to the Dispute Resolution Panels. The Parties, acting jointly, may request an advisory opinion from one or both Dispute Resolution Panels at any time before formally submitting the dispute for resolution. To do so, the Parties must submit a formal request to the relevant Panel or Panels. Any advisory opinion must be provided in writing (unless both parties agree otherwise), be non-binding,

and not affect any subsequent resolution efforts. Two separate Dispute Resolution Panels will be established: a "Commercial Panel" and a "Technical Panel." Any dispute (or relevant portion of it, with the remaining parts handled by a single Panel) may be initially referred to both Panels jointly by either party acting reasonably. Each Panel will act impartially and fairly, giving each party a fair opportunity to present its position and respond to the other. All decisions made by a Dispute Resolution Panel must be communicated to the parties in writing, including the rationale for the decision. After receiving such a decision, within 10 working days, the developer must notify Enterprises whether they accept or reject the decision in whole or in part, and Enterprises must respond within 10 working days of receiving that notification. Table 6 details the Central 70 Project Dispute Resolution Process.” (CBE et al., 2017).

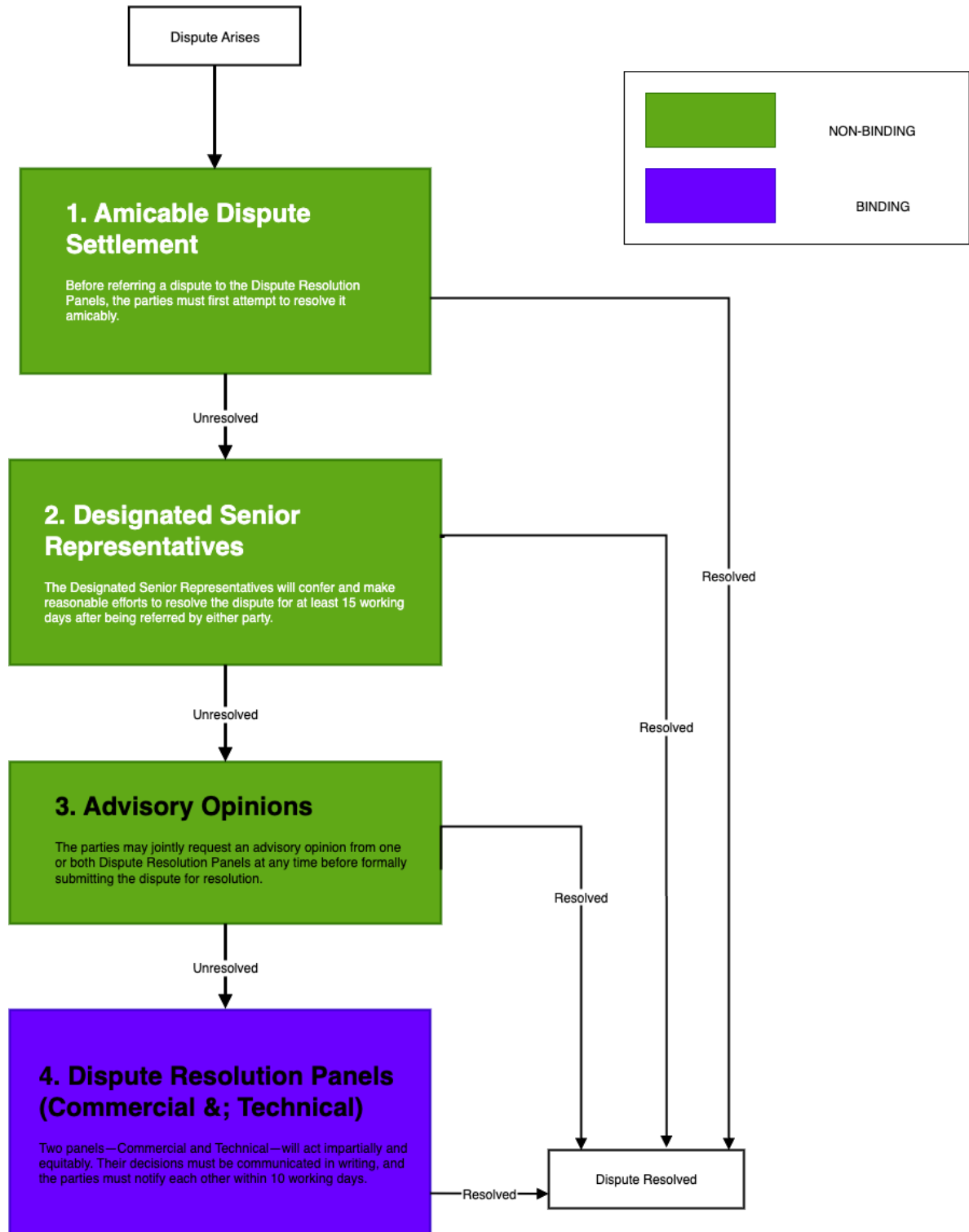
Table 11 Central 70 Project Dispute Resolution Process

DRB	Procedure
Amicable Dispute Settlement	Before referring a dispute to the Dispute Resolution Panels, the parties must attempt to resolve it amicably.
Designated Senior Representatives	The Designated Senior Representatives will confer and make other reasonable efforts to resolve the dispute for at least 15 working days after being referred by either party. Following such a referral to their designated senior representatives,
Advisory Opinions	The Parties, acting jointly, may request an advisory opinion from one or both Dispute Resolution Panels at any point before formally presenting a dispute to the Dispute Resolution Panels for resolution.
Dispute Resolution Panels	Two Dispute Resolution Panels will be established: Commercial and Technical, each acting impartially and equitably. Decisions must be

	communicated in writing, and parties must inform each other within 10 working days.
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Figure 16 Summary Chart of the Central 70 Dispute Resolution Process

Central 70 Project – Colorado



5.2.7 North Tarrant Express I-820 and SH 121/183 (Segments 1 and 2W), Texas

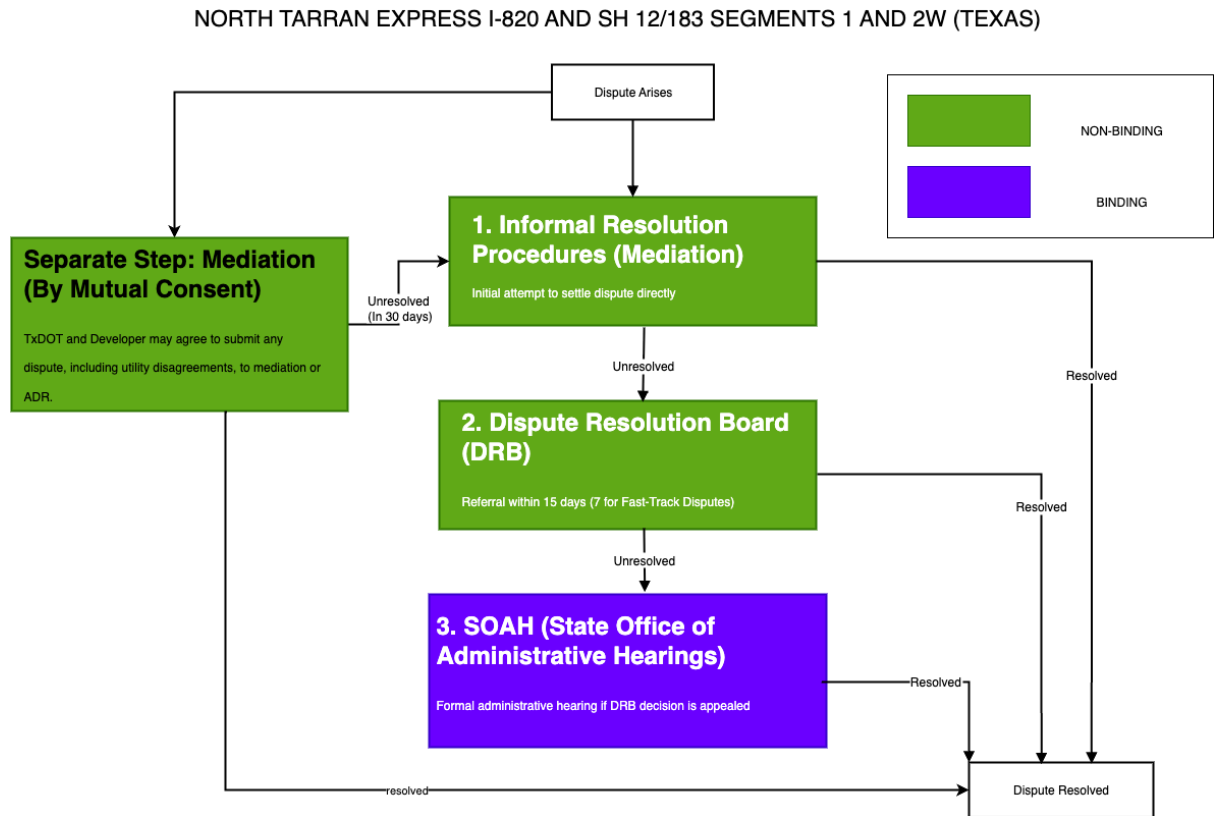
The North Tarrant Express I-820 and SH 121/183 (Segments 1 and 2W) was a \$2.1 billion highway project in the Dallas-Fort Worth Metroplex, carried out as a public-private partnership between the Texas Department of Transportation (TxDOT) and NTE Mobility Partners, LLC. This project expanded the highway from four lanes to six main lanes, adding four TEXpress lanes, frontage roads, and auxiliary lanes to nearly double its capacity.

The dispute resolution clauses in the Development Agreement are outlined in Article 17.8. The agreement specifies that, “Initially, parties should attempt informal resolution by serving written notice through their designated representatives, stating their position and preferred method. Within five business days of receiving a response, representatives may document the dispute resolution process, including signing necessary documentation, and then promptly fulfill their obligations. If the dispute remains unresolved, the Developer's CEO and TxDOT officials will meet in good faith within 10 days to resolve the issue, documenting any agreements reached. If still unresolved after informal steps, the parties may escalate the dispute to the Disputes Board within 15 days (or 7 days for Fast-Track Disputes), which will then issue a final, binding decision following specified procedures. Either party can request a formal hearing before SOAH within 10 days if they believe the Disputes Board's decision was affected by grounds for appeal. The Executive Director will issue a final order within 28 days of receiving the ALJ's proposal, which may invalidate or dismiss the Disputes Board’s decision, or send it back for reconsideration if conflicts of interest or jurisdiction issues are identified. Alternatively, TxDOT and the developer can agree to mediation or other dispute resolution methods, aiming to complete these within 30 days with costs split evenly. If unresolved after 30 days, either party may withdraw from mediation.

Table 12 North Tarrant Express I-820 and SH 121/183 (Segments 1 and 2W) Project Dispute Resolution Process

Steps	Dispute Resolution	Process
Step 1	Informal Resolution Procedures	The claiming party must first use the informal settlement procedures to try to settle the dispute directly with the replying party.
Step 2	Dispute resolution board	After the last period under the Informal determination Proceedings has ended, either party may serve written notice on the other party within 15 days (seven days for Fast-Track Disputes) to refer the issue to the Disputes Board for determination.
Step 3	SOAH	One party may ask the Executive Director to request a formal administrative hearing before the State Office of Administrative Hearings ("SOAH") if the party feels that the grounds for appeal impacted a Disputes Board decision.
Step 4	Mediation	By mutual consent, TxDOT and the developer may submit a dispute (including any disagreement with a utility owner regarding a utility adjustment) to mediation or another alternative dispute resolution procedure.

Figure 17 Summary Chart of the North Tarrant Express I-820 and SH 121/183 (Segments 1 and 2W) Dispute Resolution Process



5.2.8 Puerto Rico PR-22 and PR-5, Puerto Rico

Puerto Rico's PR-22 and PR-5 Lease was a concession agreement between Autopistas Metropolitanas de Puerto Rico ("Metropistas," a partnership of Goldman Sachs Infrastructure Partners and Abertis Infrastructures) and the Puerto Rico Highways and Transportation Authority. Valued at \$1.4 billion, the project involved upgrading and maintaining highways PR-22 and PR-5 to improve road safety and rehabilitation. It was completed under a 50-year lease concession.

The dispute resolution processes are outlined in Article 19 of the Concession Agreement. It states that the Parties will always make good faith efforts to resolve issues arising under the agreement. Upon receiving written notification of a dispute, the Parties will submit the matter to their designated persons, who shall negotiate in good faith, meeting as often as necessary. They should exchange relevant information related to the dispute. If informal resolution fails, either party may

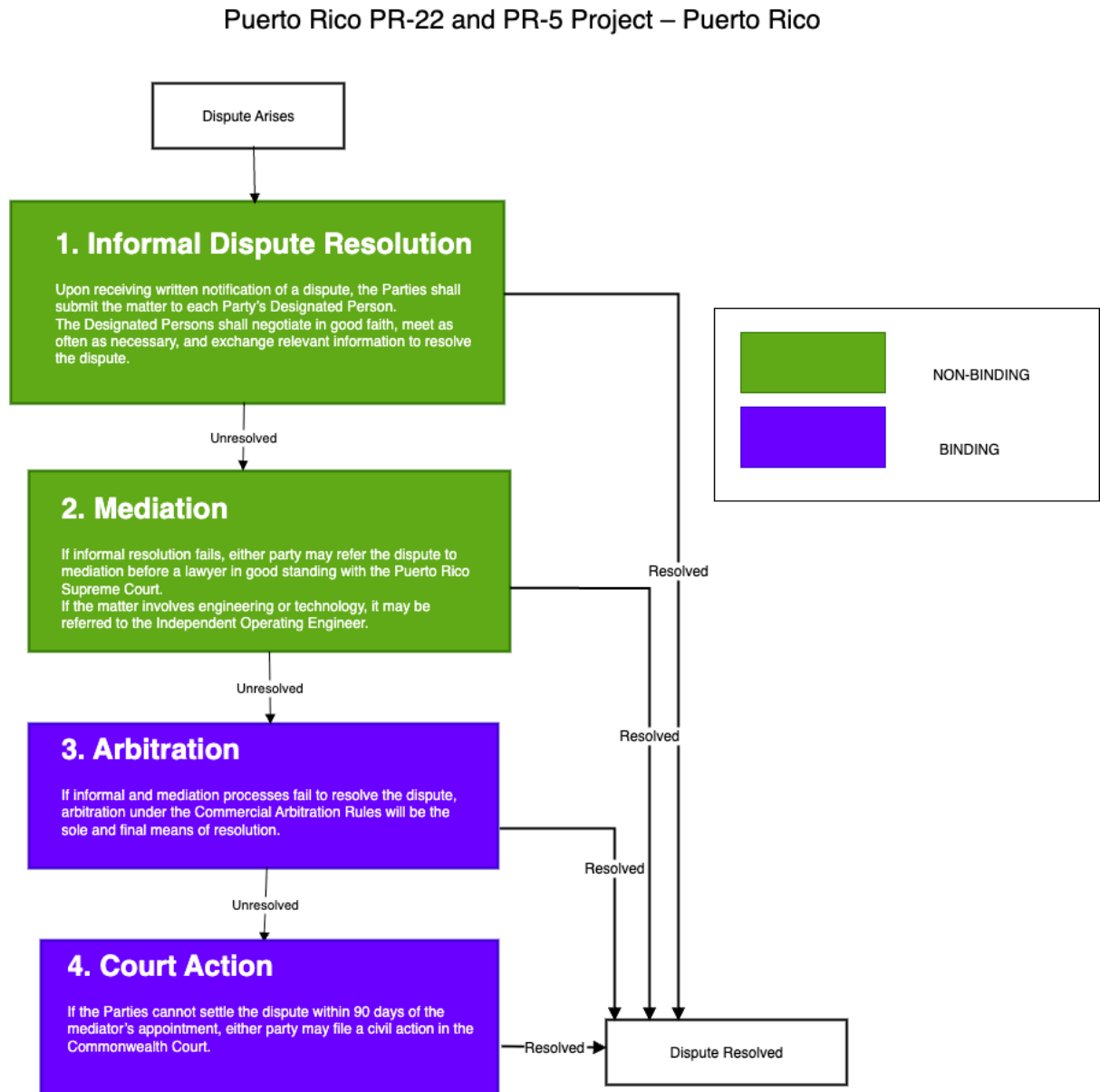
refer the dispute to a mediator, who must be a qualified lawyer in good standing with the Puerto Rico Supreme Court. For disputes involving engineering or technology, the parties may refer it to an Independent Operating Engineer. The parties must follow all protocols set by the mediator or independent engineer, and request the mediator to establish the mediation within thirty days of appointment (or within thirty days after referring the dispute to the independent engineer). If resolution still isn't achieved, arbitration under the Commercial Arbitration Rules will be the final step. Three arbitrators will be appointed: one by the authority, one by the concessionaire, and the third chosen by the first two. Once appointed, the arbitrators will act as impartial arbitrators, and no ex parte communication with any of them is allowed. The arbitrators will determine the costs and attorneys' fees, which will be equally paid by each party. Interest, as specified in Section 20.9, will accrue from the date of breach or obligation until full payment, and will be included in the award, which must be in writing with reasons provided. The award is final and can be enforced by any court with jurisdiction. If the dispute remains unresolved ninety days after the mediator's appointment, either party may initiate a civil action in the Commonwealth Court.

Table 13 Puerto Rico's PR-22 and PR-5 Project Dispute Resolution Process

Method	Procedure
Informal Dispute Resolution	The Parties also agree that, upon receipt of written notification of a dispute from a Party, the Parties will submit the matter to each Party's Designated Person. The Designated Persons shall negotiate in good faith to resolve the issue, conferring as often as they feel reasonably required, and shall gather and in good faith present each other with the information relevant to the dispute.

Mediation	Suppose the dispute cannot be settled through informal dispute resolution. In that case, either party may refer it to a mediator, who must be a lawyer in good standing with the Puerto Rico Supreme Court. If the dispute concerns engineering or technology, the parties may refer it to the Independent Operating Engineer.
Arbitration	Suppose the processes outlined in mediation and informal dispute resolution fail to resolve a dispute. In that case, arbitration under the Commercial Arbitration Rules will be the sole and final means of resolving it.
Court Action.	Either party may file a civil action in Commonwealth Court if the Parties cannot settle the disagreement within ninety (90) days of the mediator's appointment.

Figure 18 Summary Chart of the Puerto Rico PR-22 and PR-5 Dispute Resolution Process



5.2.9 Ohio River Bridges - East End Crossing, Kentucky

The Ohio River Bridges – East End Crossing was a \$1.32 billion public–private partnership linking Clark County, Indiana, and Jefferson County, Kentucky, about eight miles east of Louisville. It featured a 2,500-foot cable-stayed bridge, a 3.3-mile extension of I-265/KY 841 in Kentucky with a 1,680-foot tunnel, and a 4.1-mile extension of I-265/SR 265 in Indiana. The project used a Design–

Build–Finance–Operate–Maintain (DBFOM) availability-payment model and was awarded to WVB East End Partners—a consortium of Walsh Infrastructure, VINCI Highways, and Bilfinger Project Investments—with the Walsh–VINCI JV as the design-builder. The 39-year concession included four years of construction and 35 years of operation, funded by milestone and availability payments from toll revenue, a \$162 million TIFIA loan, Private Activity Bonds around \$507 million, and public funds. Construction started in 2013 and was mostly completed in 2016. The concession runs until 2052 (FHWA - Center for Innovative Finance Support - Project Profiles: Ohio River Bridges East End Crossing, n.d.-a).

The dispute resolution process is described in Article 19.6 of the Concession Agreement. According to Section 19.6 of the Public-Private Agreement (PPA), any Claim or Dispute related to this Agreement that cannot be resolved through cooperation under Section 19.5 must be settled following the procedures in this section. All decisions made are final, binding, conclusive, and enforceable. Before initiating formal proceedings, the claimant must first attempt an Informal Resolution Procedure. The Notice of Dispute should specify “the act, inaction or omission giving rise to the Dispute,” its “nature, circumstances and cause,” and the “desired resolution.” The parties should sincerely try to resolve the Dispute within fifteen (15) days. If they do not, the Chief Executive Officer of the Developer and the Public Finance Director must meet and negotiate in good faith within ten business days to reach a settlement.

If informal attempts fail, the Parties may choose to mediate or proceed directly to non-binding arbitration. As stated in the PPA, the Parties prefer resolving Disputes through mutual and voluntary settlements rather than binding procedures, and the Arbitrator cannot impose a binding decision. Hearings should be scheduled within 90 days, lasting up to 3 days, with a written advisory opinion provided within 20 days. If neither Party objects within 30 days, this decision becomes final

and binding. The IFA can also decide to skip arbitration for Disputes over \$15,000,000 and move directly to litigation.

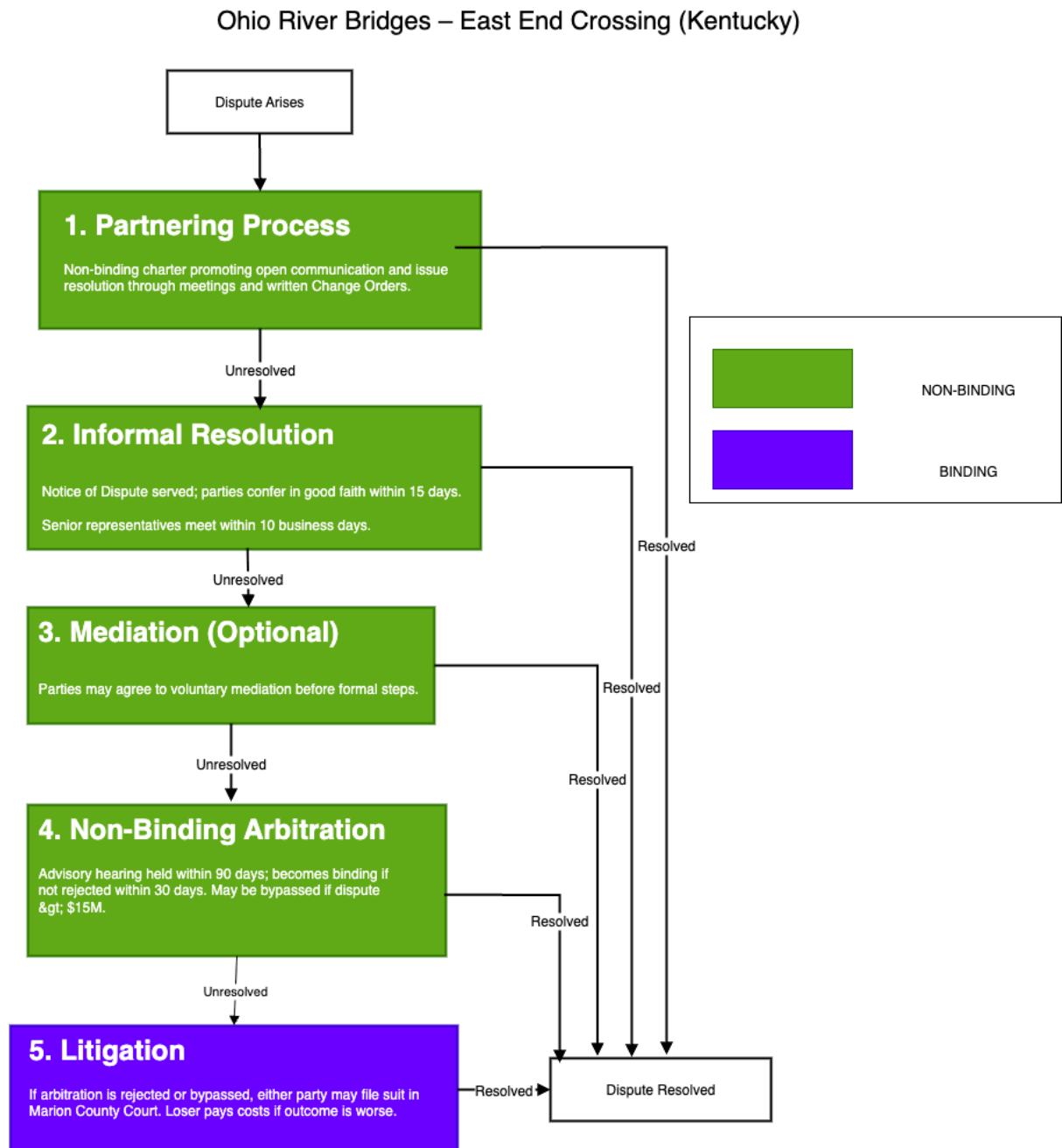
If a Party challenges the Arbitrator’s decision, either Party can file a lawsuit in the Marion County, Indiana Circuit/Superior Court, the exclusive venue specified. The Party disputing the decision must bear all litigation costs, including attorneys’ fees, if they do not obtain a more favorable result. All negotiations and proceedings are confidential and cannot be disclosed. During any Dispute, the Developer and all Contractors must continue their work diligently and without delays, while the IFA must keep paying all undisputed amounts due under this Agreement (FDOT, 2021). Table 9 details the Ohio River Bridges – East End Crossing Dispute Resolution Process.

Table 14 Ohio River Bridges – East End Crossing Dispute Resolution Process

Dispute Method	Procedure Outlined
Partnering Process	Establishment of a non-binding partnering charter between the Indiana Finance Authority (IFA) and the Developer to promote “free and open communications, discussions, and partnering meetings.” The charter outlines meeting schedules, facilitation rules, and key representatives for both parties. Issues resolved through partnering are documented and implemented through written Change Orders.
Informal Resolution	As a “condition precedent” to any formal process, the claiming Party must serve a Notice of Dispute detailing the act or omission, contract reference, monetary impact, schedule effects, and desired resolution. The Parties must “attempt in good faith to resolve such Dispute within fifteen (15) days.” If unresolved, the Developer’s CEO and IFA’s Public Finance Director (or designee) “shall meet and confer in good faith” within 10 business days to seek settlement.

Mediation (Optional)	If informal resolution fails, “the Parties may mutually agree to initiate mediation.” The process is voluntary and aims to facilitate compromise before arbitration or litigation.
Non-Binding Arbitration	Intended “to resolve the Dispute between them whenever possible by mutual and voluntary settlement.” Either Party may demand arbitration; the hearing must occur within 90 days, limited to three (3) days, with a written advisory decision issued within 20 days. If neither Party rejects the decision within 30 days, it “shall become final and binding.” The IFA may bypass arbitration for disputes exceeding \$15,000,000.
Litigation	If arbitration is rejected or bypassed, “either Party may file a lawsuit in the Marion County, Indiana Circuit/Superior Court,” the exclusive venue under the PPA. The rejecting Party “shall be responsible to pay litigation costs, including attorneys’ fees,” if it fails to obtain a more favorable outcome.

Figure 19 Summary Chart of the Ohio River Bridges - East End Crossing Dispute Resolution Process



5.2.10 I-595 Corridor Roadway Improvements Florida

The I-595 Corridor Roadway Improvements project in Broward County, Florida, was among the first large-scale uses of a Design–Build–Finance–Operate–Maintain (DBFOM) availability-payment public–private partnership (P3) in the U.S. Delivered via a 35-year concession between the

Florida Department of Transportation (FDOT) and I-595 Express, LLC, the project modernized 10.5 miles of Interstate 595, including mainline, frontage roads, ramps, and interchanges from I-75/Sawgrass Expressway to I-95. It introduced three reversible express toll lanes (595 Express), managed with variable pricing and flow during peak times (FHWA - Center for Innovative Finance Support - Project Profiles: I-595 Corridor Roadway Improvements, n.d.-b). FDOT maintained ownership and tolling rights, collecting toll revenues and paying the concessionaire through availability payments based on construction milestones and operational performance. The project's cost was roughly \$1.83 billion (2009 USD), funded by senior bank debt (\$781 million), a \$603 million TIFIA loan, private equity, and public funds from FDOT. Construction started in 2009, completed substantially in March 2014, and the concession runs through 2044. This was the first U.S. transportation P3 primarily compensated via availability payments, setting a national example for infrastructure delivery through private financing while keeping public control over toll policies and performance.

The dispute resolution process for the I-595 Corridor Roadway Improvements Project is detailed in Article 25 of the Concession Agreement between the Florida Department of Transportation (FDOT) and the Concessionaire. It begins when the Concessionaire objects to an FDOT decision, action, or order. A written protest must be filed within 15 days, clearly stating the reasons. FDOT then has 15 days to review the protest and issue a decision. The Concessionaire can respond with a rebuttal within 7 days, and FDOT must provide a final decision within 10 days. If the Concessionaire disputes this final decision, they can appeal in writing within 10 days. Either party can then escalate the matter to the Disputes Review Board (DRB) (FDOT, 2009).

Once a dispute was referred to the DRB, the board was required to hold a hearing within 20 days unless both parties agreed to extend the deadline. Both FDOT and the Concessionaire could submit documentary evidence at least 10 days prior to the hearing and were obliged to share this

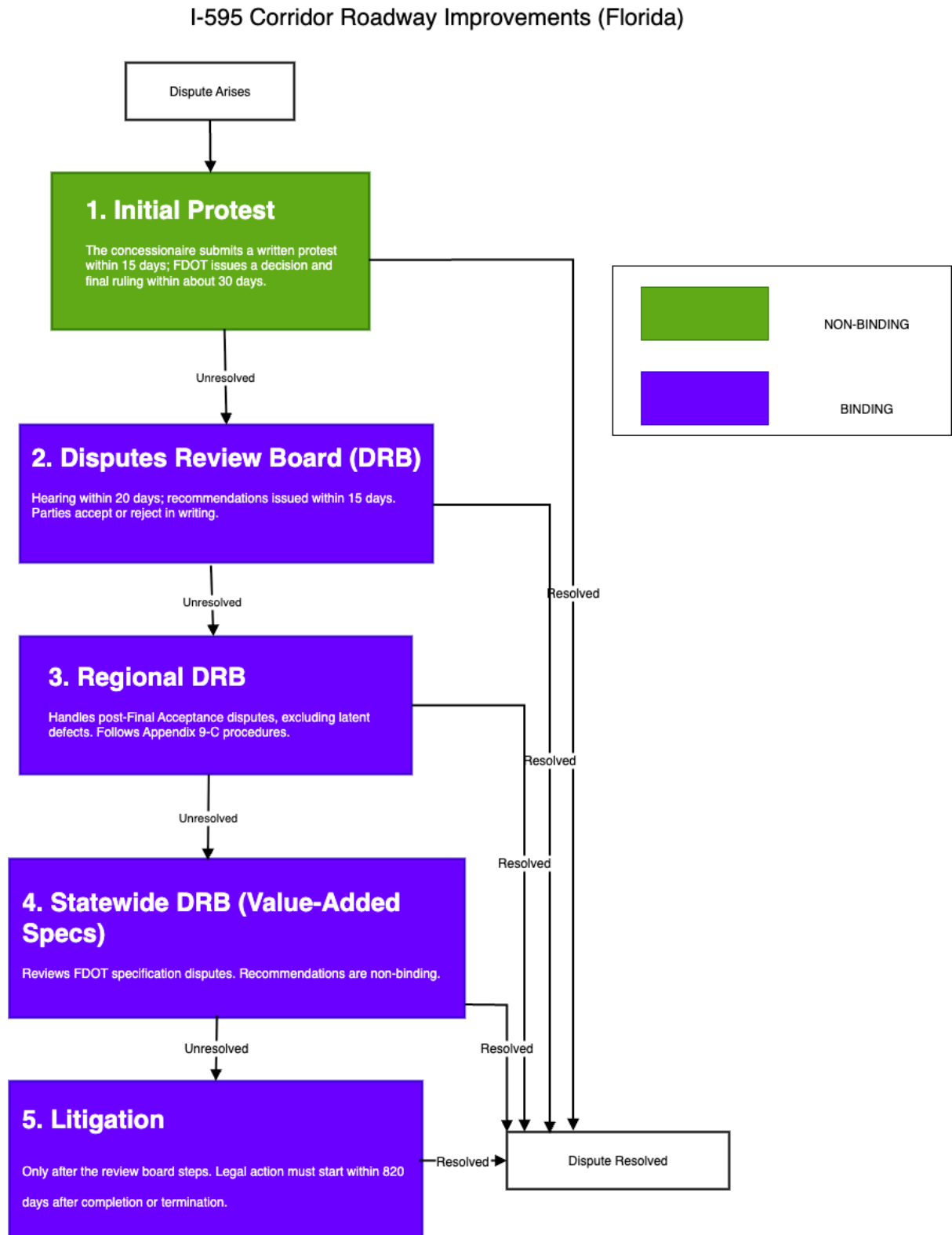
evidence with each other. During the hearing, both sides could present their cases; however, undisclosed evidence was not permitted. The DRB then issued written recommendations within 15 days following the hearing, which were deemed accepted unless explicitly rejected by either party. While these recommendations were not binding, they had significant influence and could be temporarily binding when related to Substantial Completion or Final Acceptance. For disputes after Final Acceptance, excluding latent defects, the regional Disputes Review Board handled the case, whereas issues involving “value-added” specifications were decided by the statewide Disputes Review Board. Litigation could only be initiated after completing these procedures, within 820 days of substantial completion or early termination. Throughout the process, the Concessionaire was required to continue all contractual work, even if disputes remained unresolved (FDOT, 2009).

Table 15 Corridor Roadway Improvements Project dispute resolution process

Dispute Method	Procedure
Initial Protest	Concessionaire files a written protest within 15 days of an FDOT decision, detailing the objection. FDOT reviews and issues a decision within 15 days. The Concessionaire may rebut within 7 days, after which FDOT provides a final decision in 10 days.
Disputes Review Board (DRB)	Either party may refer unresolved disputes to the DRB. A hearing is held within 20 days, with both parties submitting evidence at least 10 days prior. The DRB provides written recommendations within 15 days, which the parties then accept or reject in writing..
Regional Disputes Review Board	Handles disputes arising after Final Acceptance, excluding latent defects related to earlier work. Procedures follow Appendix 9-C of the contract.

Statewide Disputes Review Board (Value Added Specifications)	Reviews disputes related to “value added” specification performance under FDOT procedures. Its recommendations are non-binding.
Litigation	Both parties must first go through applicable review board procedures before litigation. Legal actions must begin within 820 days after either Substantial Completion or early termination.

Figure 20 Summary Chart of the I-595 Corridor Roadway Improvements Dispute Resolution Process



5.3 Canada Case Studies

This section provides an overview of selected Canadian P3 cases, focusing on the evaluation of multitiered ADR strategies. It highlights various large transportation projects, primarily delivered through DBFOM arrangements, with detailed Project Agreements and schedules available for review. Covering multiple provinces and owner–private consortium models, these cases include both construction phases and long-term O&M scenarios. The projects listed serve as the empirical basis for our cross-case analysis.

1. Ontario Line – Rolling Stock, Systems, Operations, and Maintenance (RSOM), Ontario
2. Southwest Calgary Ring Road (SWCRR), Alberta
3. Hazel McCallion Line (Hurontario LRT), Ontario
4. Port Mann / Highway 1 Improvement Project, British Columbia
5. Tłıchq All-Season Road Project, Northwest Territories
6. Northeast Anthony Henday Drive Project, Alberta
7. South Fraser Perimeter Road, British Columbia
8. Southeast Stoney Trail, Alberta
9. Valley Line West LRT Project, Alberta
10. Regina Bypass, Saskatchewan

The table below offers an overview of ten Canadian P3 projects, summarized using the same parameters as the U.S. sample for easy cross-jurisdictional comparison. These projects are located across five provinces and territories—Ontario, Alberta, British Columbia, Saskatchewan, and the Northwest Territories—and were procured through the established provincial P3 frameworks of Infrastructure Ontario, Infrastructure BC, Alberta Transportation, and SaskBuilds. Their standardized approach results in consistent delivery structures. Like the U.S. sample, the Canadian projects feature a variety of asset types: highway ring roads, expressways, a bypass, a major bridge

and highway project (Port Mann / Highway 1), a remote all-season road (the Tłıchq All-Season Road), and three light-rail transit projects (the Ontario Line, Hurontario LRT, and Valley Line West). Project costs vary significantly, from about CAD \$411.8 million for the Tłıchq All-Season Road to CAD \$9 billion for the Ontario Line. Concession periods typically range from around 25 to 40 years. Except for Valley Line West—which was procured as a design-build-finance project—all are DBFOM concessions, highlighting the widespread use of the full design-build-finance-operate-maintain model in Canadian transportation infrastructure. The dispute-resolution provisions are individually examined in subsequent sections, providing the empirical foundation for the comparative analysis of U.S. and Canadian ADR practices in Section 15.3.

Table 16 Overview of Canadian P3 Case Study Projects

Project (abbrev.)	Type	Jurisdiction	P3 model	Total cost	Duration / concession	Key features & parties
Ontario Line — RSOM	Transit (LRT systems / O&M)	Ontario	DBFOM	CAD \$9 B	30-yr concession (from 2022)	Rolling stock, signalling, systems & long-term O&M for 15.6-km Ontario Line, Toronto. Owner: Metrolinx / Infrastructure Ontario; Concessionaire: Connect 6ix.
SWCRR — Southwest Calgary Ring Road	Highway (ring road)	Alberta	DBFOM	CAD \$2.2 B	35-yr concession (from 2015)	31 km of six- and eight-lane divided highway, 14 interchanges, 47 bridges, Calgary. Owner: Alberta Transp.; Concessionaire: Mountain View Partners.
Hurontario LRT — Hazel McCallion Line	Transit (LRT)	Ontario	DBFOM	CAD \$4.6 B	30-yr concession (from 2019)	18-km line, 19 stops, Port Credit (Mississauga)–Steeles Ave (Brampton). Owner: Metrolinx / IO; Concessionaire: Mobilinx Hurontario.
Port Mann / Highway 1	Bridge + highway (mixed)	British Columbia	DBFOM	CAD \$3.3 B	40-yr concession (from 2009)	New 10-lane Port Mann Bridge + 37 km of Highway 1, Metro Vancouver. Owner: BC MoTI; Concessionaire: Kiewit/Flatiron GP.
TASR — Tłıchǫ All-Season Road	Highway (gravel road)	Northwest Territories	DBFOM	CAD \$411.8 M	Constr. from 2019; term not stated	18-km, two-lane all-season road to Whatì. Owner: Govt. of NWT; Concessionaire: North Star Infrastructure (Kiewit / Tłıchǫ Investment Corp.).

NE Anthony Henday Drive	Highway (ring road)	Alberta	DBFOM	CAD \$1.81 B	34-yr concession (from 2012)	27 km of six- and eight-lane freeway, 8 interchanges, 47 bridges, Edmonton ring road. Owner: Alberta Transp.; Concessionaire: NE Anthony Henday Drive Ltd.
SFPR — South Fraser Perimeter Road (Hwy 17)	Highway (expressway)	British Columbia	DBFOM	CAD \$658 M	≈20-yr P3 term	40-km four-lane expressway, Delta–Surrey, south of Fraser River. Owner: Province of BC; Concessionaire: Fraser Transportation Group.
SE Stoney Trail — Southeast Stoney Trail	Highway (ring road)	Alberta	DBFOM	CAD \$769 M	33-yr concession	25-km ring-road segment, 6 interchanges, 27 bridges, Calgary. Owner: Alberta Transp.; Concessionaire: Chinook Roads Partnership.
Valley Line West LRT	Transit (LRT)	Alberta	DBFOM	CAD \$2.6 B	Constr. from 2021; term not stated	14-mi LRT extension west from downtown Edmonton, 14 stops, 2 transfer stations. Owner: City of Edmonton; Concessionaire: Marigold Infrastructure Partners.
Regina Bypass	Highway (bypass)	Saskatchewan	DBFOM	CAD \$1.88 B	Term not stated	61 km of new four-lane highway, 37 km service roads, 12 interchanges, 33 bridges. Owner: Sask. (SaskBuilds / Min. of Highways); Concessionaire: Regina Bypass Partners.

5.3.1 Ontario Line – Rolling Stock, Systems, Operations, and Maintenance (RSOM), Ontario

The Ontario Line – Rolling Stock, Systems, Operations, and Maintenance (RSOM) Project in Ontario was a significant transit initiative delivered as a Design–Build–Finance–Operate–Maintain (DBFOM) public-private partnership. Launched in 2022 and estimated at around CAD \$9 billion, it was managed by Metrolinx and Infrastructure Ontario. The private consortium Connect 6ix—led by Hitachi Rail and John Laing—served as the concessionaire for 30 years. The project's scope included designing, supplying, integrating, and managing the long-term operation and maintenance of the Ontario Line's rolling stock, signaling, communication systems, and related infrastructure. This initiative was a vital part of Toronto's 15.6-kilometer Ontario Line, aimed at improving connectivity, easing congestion, and boosting capacity within the regional transit system. The private partner handled system operations and maintenance until handback.

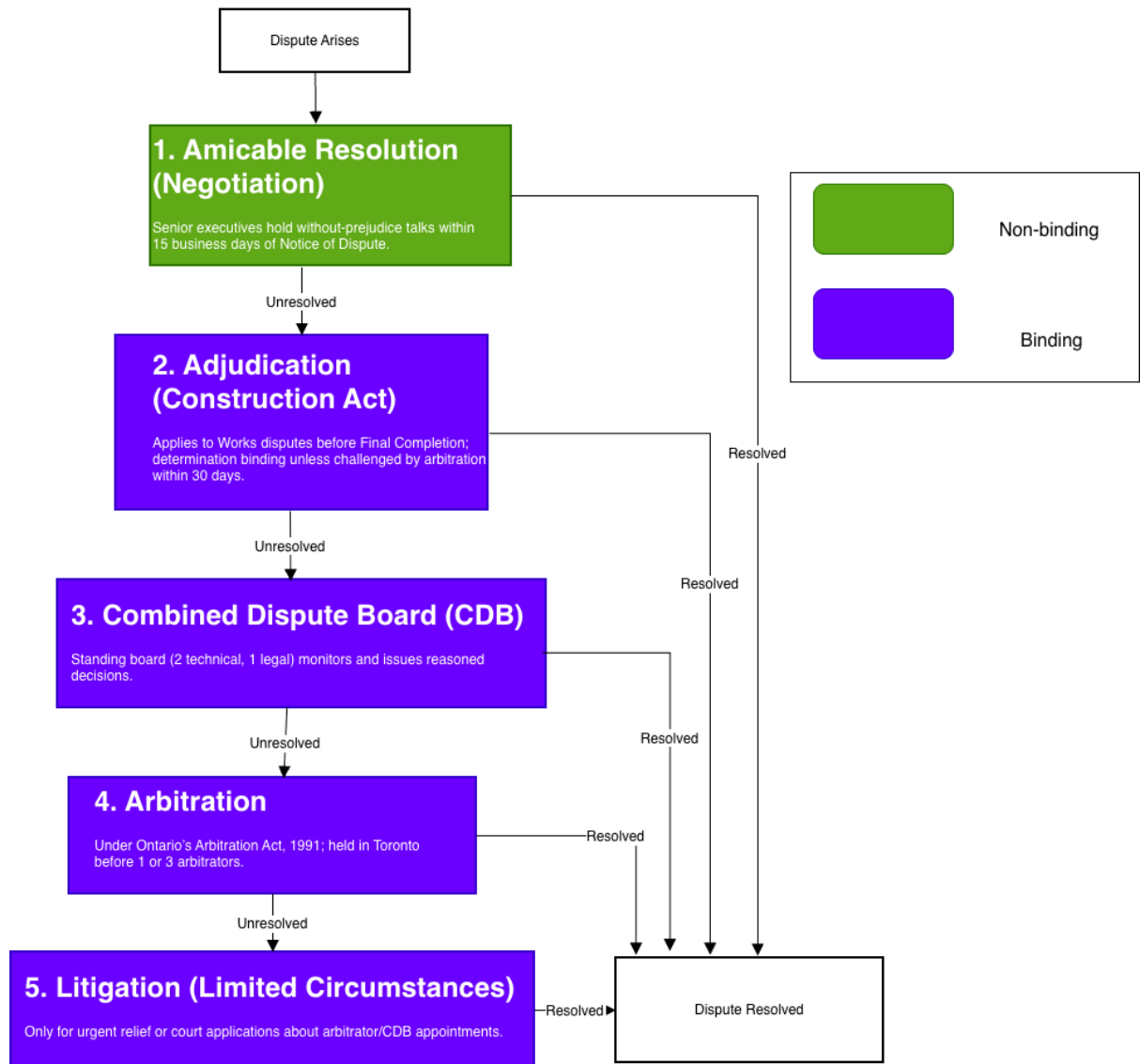
The Ontario Line RSOM Project Agreement establishes a structured multi-tier dispute resolution process, detailed in Schedule 27, to ensure fair and efficient outcomes. Disputes are first escalated to senior Party Executives for informal, without-prejudice negotiations within fifteen business days of a Notice of Dispute, known as Amicable Resolution. If unresolved, disputes concerning works before final completion can proceed to Adjudication under Ontario's Construction Act, where decisions are binding unless challenged by arbitration within thirty days. A permanent Combined Dispute Board (CDB), consisting of two technical experts and a legal chair, was set up at Financial Close. The CDB monitors progress, reviews disputes, and issues binding, reasoned decisions unless challenged by arbitration. Any unresolved disputes are finally settled through arbitration under the Arbitration Act, 1991 (Ontario), in Toronto, before a sole arbitrator or a three-member tribunal, with decisions being final and binding. Litigation is reserved for urgent cases requiring injunctive relief or court action related to arbitrators or CDB members.

Table 17 Ontario Line – Rolling Stock, Systems, Operations, and Maintenance Dispute Resolution Process

Dispute Method	Procedure
Amicable Resolution (Negotiation)	Disputes are escalated to Party Executives (senior representatives) for without-prejudice negotiations within 15 business days of a Notice of Dispute.
Adjudication (Construction Act, Ontario)	For disputes related to the Works before Final Completion, either party may refer the matter to adjudication. Determinations are binding unless challenged by arbitration within 30 days.
Combined Dispute Board (CDB)	A standing three-member board (two technical experts and one legal chair) is appointed at Financial Close to monitor progress, review disputes, and issue reasoned decisions. Decisions are binding unless referred to arbitration within the “Arbitration Referral Period.”
Arbitration (Final and Binding)	Unresolved disputes are referred to arbitration under the Arbitration Act, 1991 (Ontario), conducted in Toronto by a single arbitrator or three-member tribunal. Awards are final and binding.
Litigation (Limited Circumstances)	Permitted only for urgent matters requiring injunctive relief (e.g., public safety) or for court applications involving the appointment or challenge of arbitrators or CDB members.

Figure 21 Summary Chart of the Ontario Line – Rolling Stock, Systems, Operations, and Maintenance (RSOM) Dispute Resolution Process

Ontario Line – Rolling Stock, Systems, Operations, and Maintenance (RSOM), Ontario



5.3.2 Southwest Calgary Ring Road (SWCRR), Alberta

The Southwest Calgary Ring Road (SWCRR) was a key transportation project in Calgary, Alberta, completed through a Design–Build–Finance–Operate–Maintain (DBFOM) P3 model. Initiated in 2015, it was valued at about CAD \$2.2 billion. Alberta Transportation acted as the public

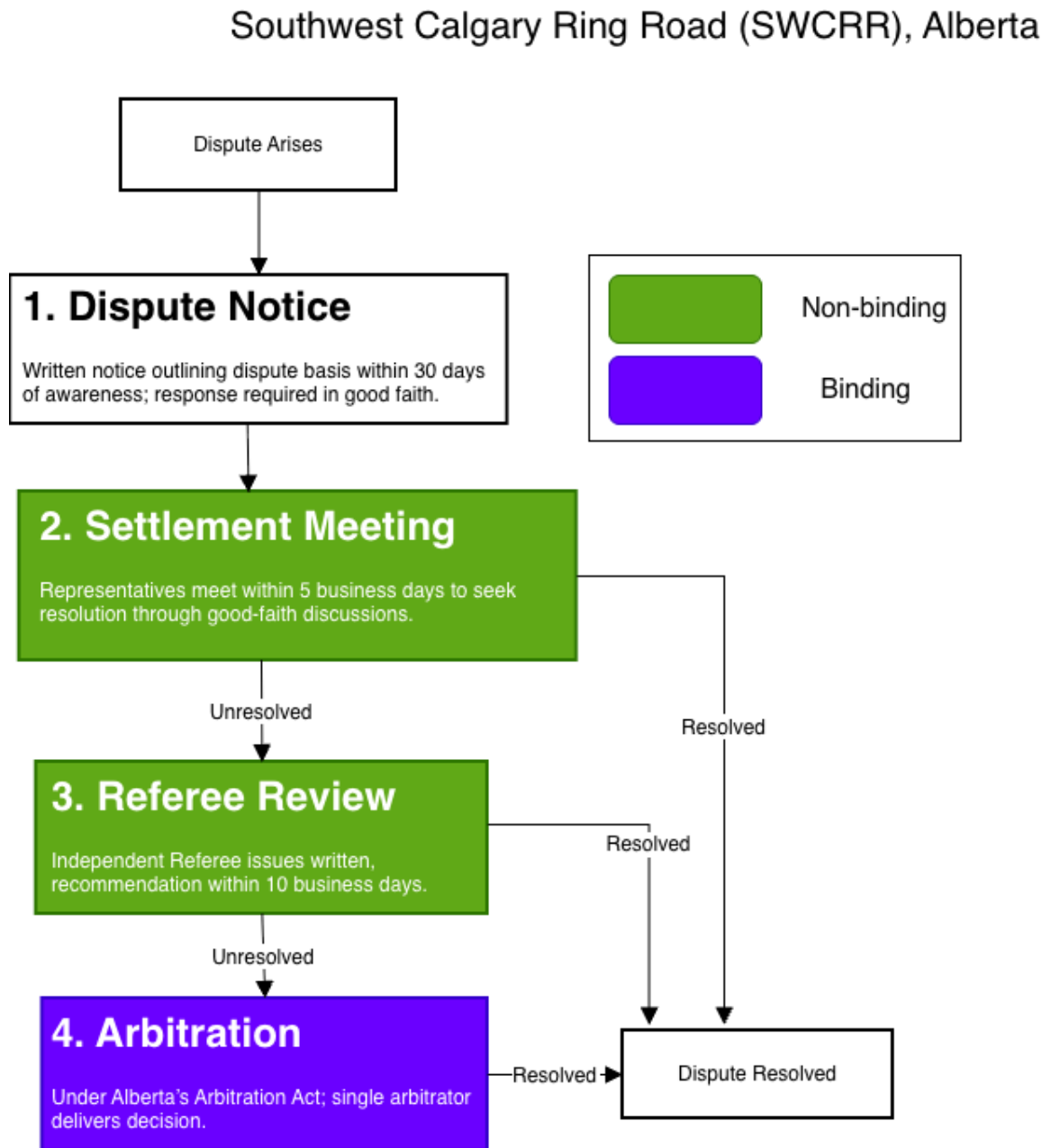
partner, with the private consortium Mountain View Partners—including Meridiam Infrastructure, Kiewit, Connor, Clark & Lunn GVest, and Ledcor—handling the delivery. The project built an essential section of Calgary’s ring road, focusing on the southwest region of the city. The DBFOM agreement covered design, construction, financing, operations, and maintenance for 35 years. It involved reconstructing Glenmore Trail from Sarcee Trail to east of 37 Street SW, creating 31 kilometers of six- and eight-lane divided highway, 14 interchanges, 47 bridges, a road flyover, a railway flyover, a culvert set, a tunnel, and three river crossings over the Elbow River and Fish Creek. Its aim was to enhance traffic flow, safety, and regional connectivity (Alberta, n.d.-a).

The Southwest Calgary Ring Road (SWCRR) Project Agreement established a clear, step-by-step process for resolving disputes promptly and fairly. It starts with a Dispute Notice, which either party can issue within thirty days of discovering an issue. The notice must specify the dispute's basis, and the recipient is expected to respond in good faith. Within five business days of receiving the notice, Alberta Transportation and Mountain View Partners hold a Settlement Meeting to attempt resolution. If unresolved after fifteen days, the dispute is referred to a Referee, who must be impartial, independent, and experienced in similar projects, either jointly appointed or through arbitration if there is no agreement. The Referee conducts an appropriate review—such as examining documents, visiting sites, or holding discussions—and issues a written recommendation within ten business days. Though non-binding, this recommendation aims to help the Parties reach an agreement. If still unresolved, the dispute proceeds to arbitration under the Arbitration Act (Alberta). A single arbitrator, mutually agreed upon or appointed by the Court of Queen’s Bench, makes a final, binding decision within fifteen business days of the hearing, with costs determined as per the Act (SWCRR, 2016).

Table 18 Southwest Calgary Ring Road (SWCRR) Dispute Resolution Process

Dispute Method	Procedure Outlined
Dispute Notice (Initiation)	Either party may deliver a written Dispute Notice outlining the basis for the dispute within 30 days of becoming aware of the issue. The receiving party must respond in good faith.
Settlement Meeting	Within 5 business days of the Dispute Notice, representatives of Alberta Transportation and Mountain View Partners meet to attempt resolution. If unresolved within 15 days, the matter is referred to a Referee. All discussions are without prejudice.
Referee Review	Parties jointly appoint an impartial and experienced Referee. If they cannot agree, appointment is determined by arbitration. The Referee remains in place until project completion unless otherwise agreed. The Referee conducts reviews, site visits, and discussions as necessary. A written recommendation is issued within 10 business days (or longer if agreed). The recommendation is non-binding but intended to assist in reaching agreement.
Arbitration (Final and Binding)	If unresolved after the Referee's recommendation, either party may refer the dispute to arbitration under the Arbitration Act (Alberta). A single arbitrator (mutually agreed or court-appointed) issues a final, binding decision within 15 business days of the hearing.

Figure 22 Summary Chart of the Southwest Calgary Ring Road (SWCRR) Dispute Resolution Process



5.3.3 Hazel McCallion Line (Hurontario LRT), Ontario

The Hurontario Light Rail Transit (LRT) was a \$4.6 billion public-private partnership project launched in 2019 in Ontario, Canada. Managed via a Design, Build, Finance, Operate, and Maintain (DBFOM) model, it was led by Metrolinx and Infrastructure Ontario as public sponsors. The private

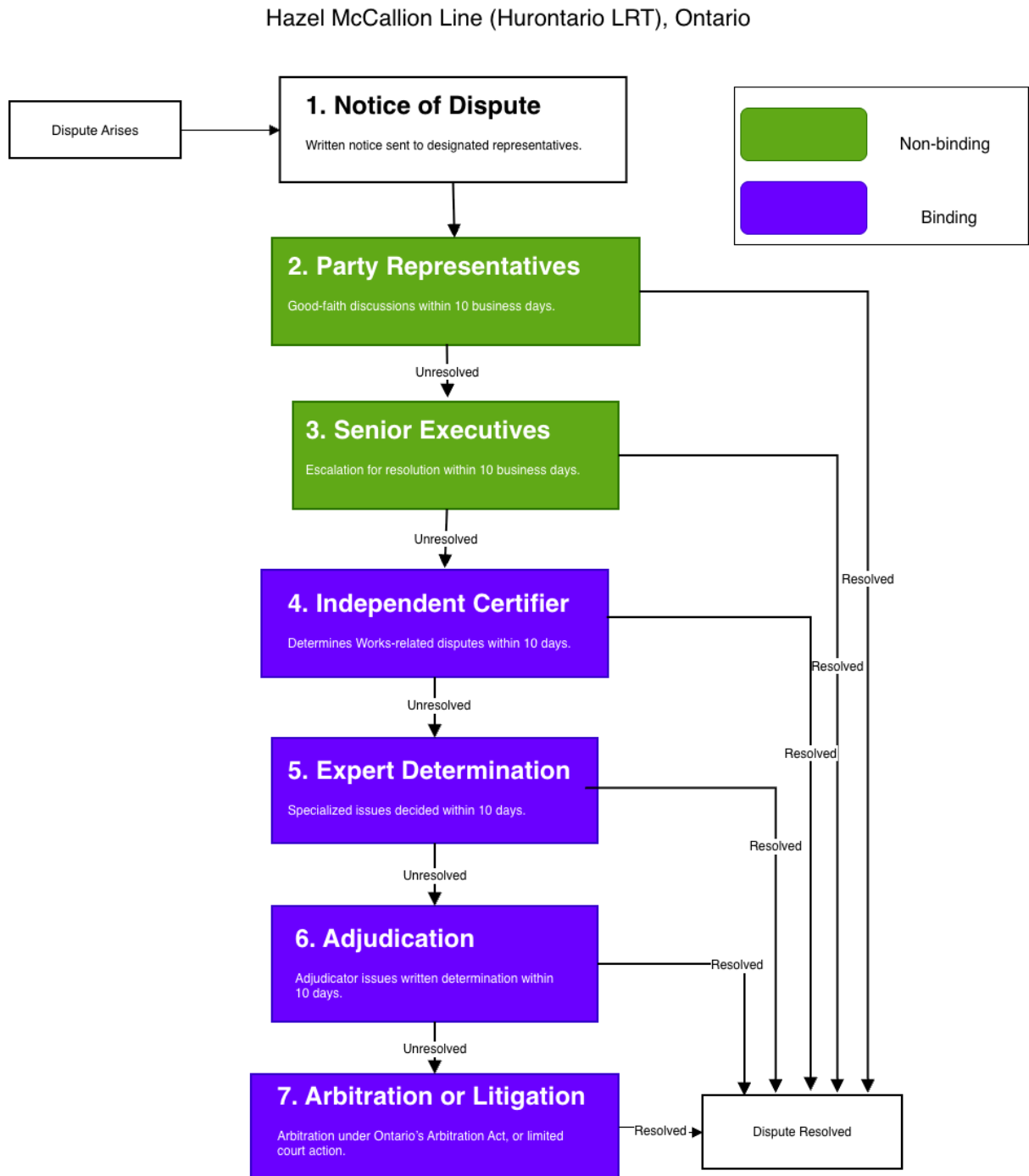
partner, Mobilinx Hurontario General Partnership—including Transdev, Amico, Dragados, John Laing, and Astaldi—secured a 30-year operations and maintenance concession. The 18-kilometre line extended from Port Credit GO Station in Mississauga to Steeles Avenue in Brampton, with 19 stops, a dedicated LRT right-of-way, and direct connections to existing GO Transit and MiWay services. The project aimed to address population growth and traffic congestion along the Hurontario corridor, cut greenhouse gas emissions, and create a sustainable, high-capacity transit option that promotes regional economic development (*Hurontario Light Rail Transit*, n.d.).

The Hurontario Light Rail Transit Project Agreement outlines a structured, multi-level dispute resolution process in Schedule 27 designed to promote early and efficient problem-solving. Disputes are first managed at the management level, where either party can send a Notice of Dispute to representatives. Following this, Party Representatives from HMQ and Project Co must engage in good-faith discussions to resolve the issue. If unresolved within ten business days, the dispute advances to Senior Executives, who have an additional ten days to attempt resolution unless otherwise agreed. Disputes concerning the Works—such as variations, certifications, or deficiencies—are referred to the Independent Certifier, who provides a determination within ten days. Specialized issues, including valuation or sustainability assessments, are resolved through Expert Determination, with decisions issued within ten days and binding unless overturned in later proceedings. Broader disputes outside these mechanisms are handled via Adjudication, with an appointed Adjudicator (by mutual agreement or the Ontario Superior Court) delivering a written decision within ten days. If still unresolved, disputes can proceed to Arbitration or Litigation: arbitration under the Arbitration Act, 1991 (Ontario), yields a final, binding award in twenty days; litigation is reserved for significant monetary issues or public safety concerns (HURONTARIO LRT, 2017).

Table 19 Hazel McCallion Line (Hurontario LRT) Dispute Resolution Process

Dispute Method	Procedure Outlined
Notice of Dispute (Initiation)	Either party may issue a written Notice of Dispute outlining the issue to designated representatives, initiating the formal dispute resolution process.
Party Representatives	The HMQ and Project Co Representatives must engage in good-faith discussions and exchange relevant information to resolve the dispute within 10 business days.
Senior Executives	If unresolved, the matter escalates to senior officers from both parties, who must attempt resolution within a further 10 business days unless otherwise agreed.
Independent Certifier (Works-Related Issues)	For disputes involving the Works (e.g., variations, certification, deficiencies), the Independent Certifier issues a determination within 10 business days of referral.
Expert Determination	Specialized disputes (valuation, tender adjustments, sustainability credits) are referred to an Expert who delivers a decision within 10 business days. The decision is binding unless later overturned.
Adjudication	General disputes not covered above are referred to an Adjudicator, appointed by agreement or the Ontario Superior Court, who issues a written determination within 10 business days.
Arbitration or Litigation (Final Stage)	Either party may escalate within 15 business days of the previous determination. Arbitration under the Arbitration Act, 1991 (Ontario) produces a binding award within 20 business days. Litigation is limited to exceptional cases involving major monetary or public safety issues.

Figure 23 Summary Chart of the Hazel McCallion Line (Hurontario LRT) Dispute Resolution Process



5.3.4 Port Mann / Highway 1 Improvement Project, British Columbia

The Port Mann/Highway 1 Improvement Project in British Columbia was a significant infrastructure initiative executed through a Design–Build–Finance–Operate–Maintain (DBFOM)

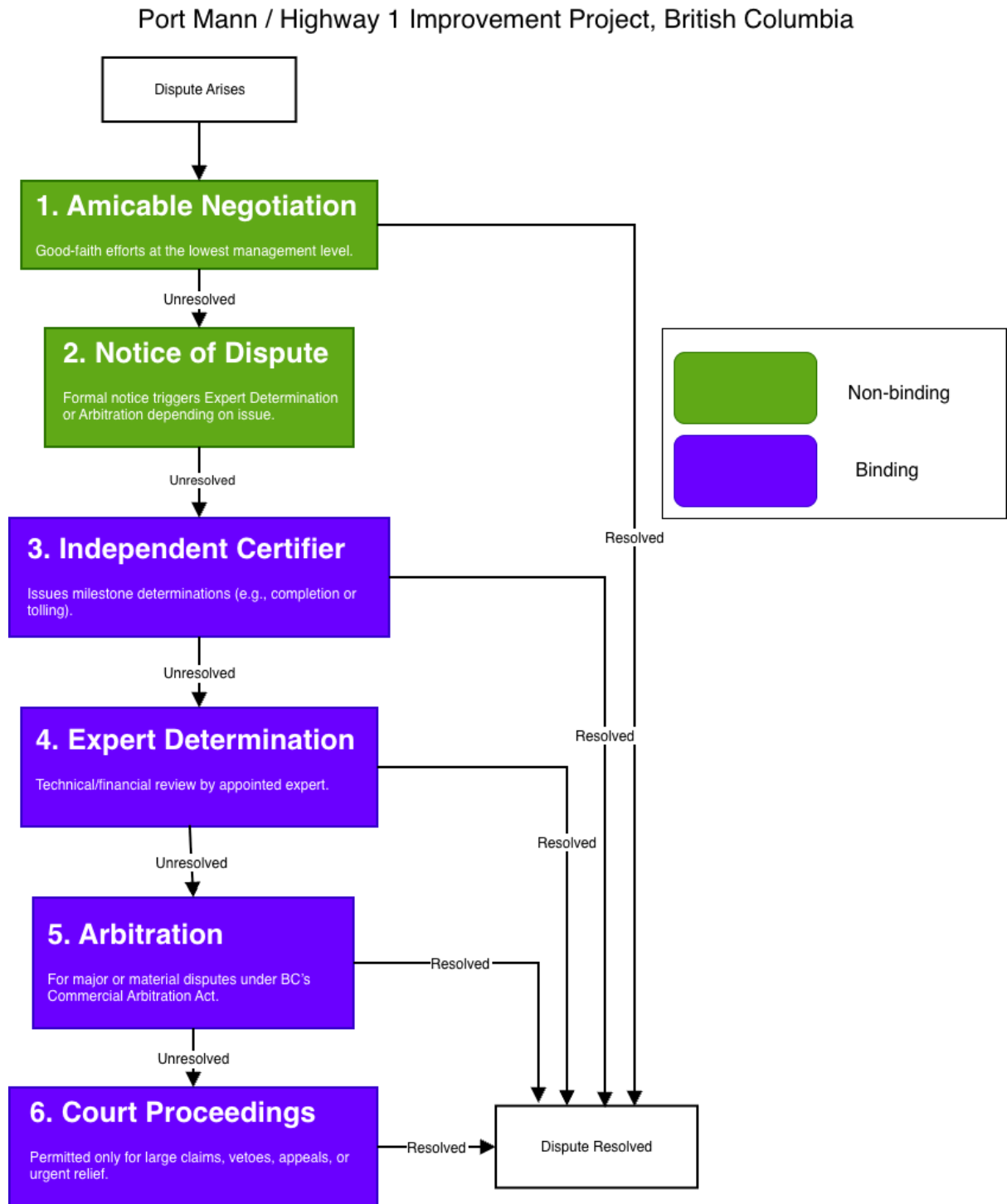
public-private partnership. Initiated in 2009, it was estimated to cost \$3.3 billion and was overseen by the British Columbia Ministry of Transportation and Infrastructure. The private consortium Kiewit/Flatiron General Partnership, supported by Macquarie Group and others, served as the concessionaire for 40 years. The project involved constructing a new 10-lane Port Mann Bridge over the Fraser River, upgrading 37 kilometers of Highway 1 connecting Vancouver and Langley, along with related interchanges. Its primary aim was to reduce congestion, improve goods movement, and accommodate long-term growth in population and traffic in Metro Vancouver. According to the concession agreement, the private partner handled operations and maintenance of the bridge and highway improvements until the handback.

The Port Mann/Highway 1 Improvement Project Agreement included a detailed dispute resolution process outlined in Schedule 13 [Dispute Resolution] to facilitate prompt resolution and avoid delays. Disputes initially were handled through Amicable Negotiation, where both parties aimed to resolve issues at the lowest management level in good faith. If unresolved, a Notice of Dispute could be issued, leading to either Expert Determination or Arbitration, depending on the matter. The Independent Certifier provided binding decisions on key milestones such as Tolling Commencement, Substantial Completion, and Total Completion, unless overturned through arbitration or court ruling. For technical or financial disputes, a designated expert from a three-member panel issued binding decisions within ten business days. More significant or complex disputes—those involving substantial value or Certifier decisions—were settled through Arbitration under the Commercial Arbitration Act (British Columbia). Arbitration awards were final and binding within thirty business days, with limited appeal rights. Court proceedings were reserved for disputes exceeding \$2 million, legal appeals, or urgent remedies. Throughout all stages, the Constructor was required to continue performing contractual duties to prevent delays in project completion (*Hurontario Light Rail Transit*, n.d.).

Table 20 Port Mann/Highway 1 Improvement Project Dispute Resolution Process

Dispute Method	Procedure
Amicable Negotiation	Parties first seek good-faith resolution at the lowest management level before escalation.
Notice of Dispute	If unresolved, either party issues a formal notice that triggers Expert Determination or Arbitration based on dispute type.
Independent Certifier (Milestones)	Certifier issues binding determinations on Tolling Commencement, Substantial Completion, and Total Completion; subject to possible arbitration/court overturn.
Expert Determination (Technical/Financial)	From a standing 3-person panel, one expert is appointed to review submissions/inspect works and issue a decision within 10 business days; decision stands unless later overturned.
Arbitration (Material Disputes)	Required for disputes involving Certifier decisions, amounts > \$500,000, or significant issues; conducted under the Commercial Arbitration Act (BC) with award due within 30 business days; final and binding, limited appeal (e.g., error of law, awards > \$5M, natural justice).
Court Proceedings (Limited Cases)	Permitted if claim > \$2M, a party vetoes arbitration, a narrow appeal is brought, or emergency relief is needed.
Continuing Performance Obligation	Constructor must continue all contractual/DB work during the dispute process so project delivery is not delayed.

Figure 24 Summary Chart of the Port Mann / Highway 1 Improvement Project Dispute Resolution Process



5.3.5 Tłıchq All-Season Road Project, Northwest Territories

The Tłıchq All-Season Road (TASR) is an 18-kilometer, two-lane gravel highway connecting Highway 3 near Behchokò to the Tłıchq community of Whatì in the Northwest Territories. Construction started in 2019 and was delivered through a Design–Build–Finance–Operate–Maintain (DBFOM) public-private partnership. The project’s value is approximately CAD 411.8 million over its duration. The Government of the Northwest Territories acted as the public partner, while North Star Infrastructure—a consortium of Kiewit Canada Development Corp. and the Tłıchq Investment Corporation—served as the private partner. The aim was to ensure year-round, dependable access to Whatì, improve mobility, lessen dependence on winter roads, and boost safety and economic growth in the Tłıchq area (*All-Season Road* | *Tlıcho*, n.d.). According to Schedule 13 [Dispute Resolution] of the Project Agreement, issues are first addressed through a staged process starting with a Dispute Notice, where the complaining party details the facts, desired resolution, and grounds. Within five Business Days (or as mutually agreed), the involved parties are required to meet for good-faith negotiations without prejudice.

If unresolved, a Fast-Track Referee Process could have been initiated. During construction, the Independent Certifier served as referee unless an objection was raised; during operations, each party had 3 Business Days to propose candidates. If no agreement was reached within 4 Business Days, a referee could have been appointed under the Arbitration Act (Northwest Territories). The referee then conducted an impartial review and issued a non-binding, reasoned decision within 5 Business Days. If no settlement was achieved within 10 Business Days of the referee’s decision (or expected decision), either party could have initiated formal proceedings. Without objection within 5 Business Days of a Notice of Intention to Arbitrate, the dispute moved to binding arbitration under the NWT Act. Hearings were private (typically in Yellowknife), and the arbitrator issued a written award within 15 Business Days. If arbitration was contested—or no arbitration notice was issued—

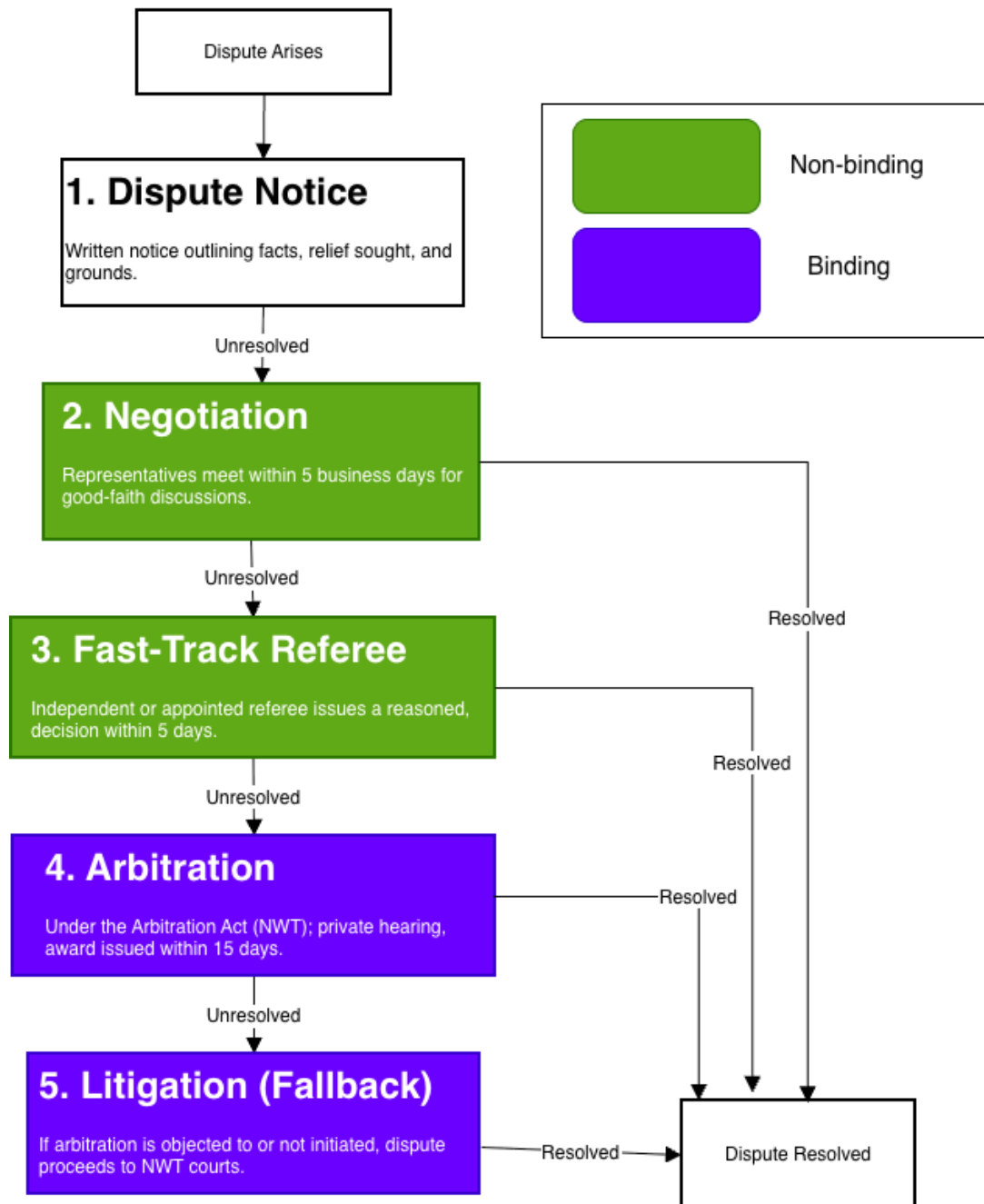
disputes could proceed to litigation in Northwest Territories courts. At any stage, either party could seek emergency court remedies (such as injunctions or provisional relief) to protect rights pending final resolution (Tłıchq All-Season Road Project, 2019).

Table 21 Tłıchq All-Season Road Dispute Resolution Process

Dispute Method	Procedure
Dispute Notice (Initiation)	Either party delivers a notice stating facts, relief sought, and grounds to commence the procedure.
Negotiation	Party representatives meet within 5 Business Days (or as agreed) for good-faith, without-prejudice discussions to seek resolution.
Fast-Track Referee – Appointment, Review & Decision (Arbitration)	If negotiation fails, either party issues a Referee Notice. Construction phase: Independent Certifier deemed referee unless objected to. Operations: each party submits candidates within 3 Business Days; if no agreement in 4 Business Days, appointment may be made under the Arbitration Act (NWT). Referee may request documents, interviews, inspections; issues a reasoned, non-binding decision within 5 Business Days of appointment.
Commencement of Proceedings	If unresolved 10 Business Days after the referee’s decision (or expected decision), either party may start formal proceedings.
Arbitration (Binding)	Party serves Notice of Intention to Arbitrate; if no objection within 5 Business Days, dispute proceeds under the Arbitration Act (NWT). Hearings are private (typically Yellowknife). Arbitrator may grant court-equivalent relief (injunctions/specific performance) and must issue a written award within 15 Business Days of the hearing.
Litigation (Fallback)	If arbitration is objected to or no arbitration notice is issued, dispute proceeds in the courts of the Northwest Territories.

Figure 25 Summary Chart of the Tłıchǫ All-Season Road Project Dispute Resolution Process

Tłıchǫ All-Season Road Project, Northwest Territories



5.3.6 Northeast Anthony Henday Drive, Alberta

The Northeast Anthony Henday Drive Project in Alberta was a major public-private partnership (P3) involving Design-Build-Finance-Operate-Maintain (DBFOM) to complete the ring road around Edmonton. Started in 2012, the project was valued at around CAD \$1.81 billion and managed by Alberta Transportation. The private concessionaire, Northeast Anthony Henday Drive Ltd., includes ACS Infrastructure, Hochtief PPP Solutions, Flatiron Constructors, and Aecon, operating under a 34-year contract. It involved building 27 kilometers of six- and eight-lane divided freeway, with eight interchanges, two flyovers, and 47 bridges to improve traffic flow and efficiency in Edmonton. The goal was to reduce congestion, boost regional mobility, and promote economic growth by creating a complete ring road for better movement of goods and people across the Edmonton area (Government of Alberta, 2012b)(*NE Anthony Henday Highway (NEAH), Alberta, Canada Meridiam, n.d.*).

The project implements a multi-level Alternative Dispute Resolution (ADR) system emphasizing speed and confidentiality, as detailed in Schedule 7: Dispute Resolution Procedure of the concession agreement. The process begins when a party submits a Dispute Notice. Within five business days, appointed officials from the Province and the Contractor meet in a Settlement Meeting to try resolving the dispute. If unresolved within fifteen days of the notice, the case advances to the Referee stage. In Step 2 (Referee Review), a Referee—appointed within two years of contract signing—executes an unbiased assessment. The Referee, who must be independent, qualified, and experienced in large infrastructure projects, conducts reviews that can include document analysis, site visits, and interviews. A written recommendation is issued within ten business days. While non-binding, it helps facilitate an agreement. If still unresolved, Step 3 (Arbitration) can begin under the Arbitration Act (Alberta), either following the Referee's recommendation or if parties choose to bypass the referee stage. An arbitrator is selected by mutual consent or, if that fails, appointed by

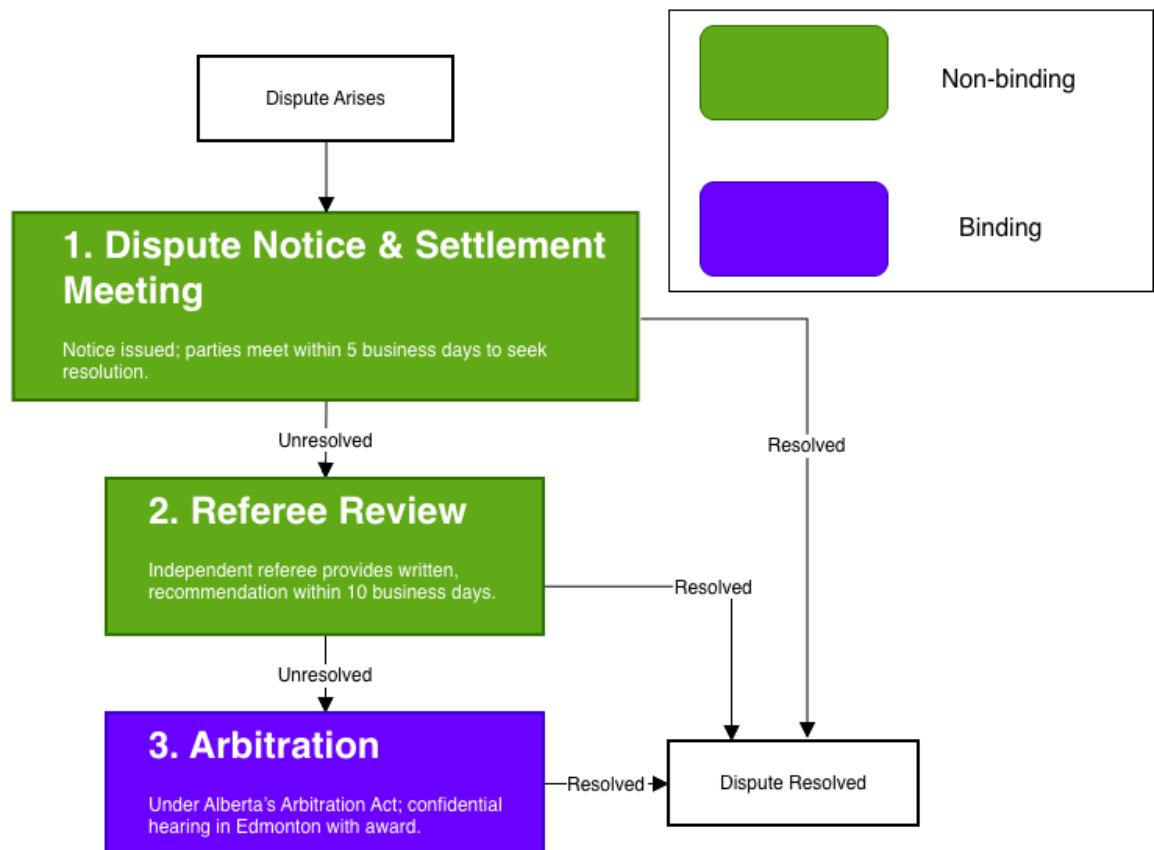
the Court of King’s Bench of Alberta. Hearings are held in Edmonton, are confidential, and the arbitrator must deliver a decision within fifteen business days after the final hearing. The decision is final and binding, with limited grounds for judicial review under the Act (Government of Alberta, 2012a).

Table 22 Northeast Anthony Henday Drive Dispute Resolution Process

Step / Dispute Method	Procedure
Dispute Notice & Settlement Meeting	A party issues a Dispute Notice. Within 5 business days, designated officials from the Province and the Contractor meet for a Settlement Meeting. If unresolved within 15 days of the notice, the matter moves to the Referee stage.
Referee Review (Non-binding)	A Referee (appointed within 2 years of contract signing) must be independent, qualified, and experienced in major infrastructure projects. The Referee may review documents, conduct site inspections, and interview stakeholders, then issues a written recommendation within 10 business days. Recommendation is non-binding and intended to assist settlement.
Arbitration (Final & Binding)	If still unresolved (or if the referee stage is waived), either party may initiate binding arbitration under the Arbitration Act (Alberta). A single arbitrator is mutually agreed or appointed by the Court of King’s Bench of Alberta. Hearings are confidential in Edmonton, and a written award is due within 15 business days of the final hearing. Decision is final and binding subject to limited judicial review.

Figure 26 Summary Chart of the Northeast Anthony Henday Drive Project Dispute Resolution Process

Northeast Anthony Henday Drive Project, Alberta



5.3.7 South Fraser Perimeter Road, British Columbia

South Fraser Perimeter Road (SFPR), also called Highway 17, is a major 40-kilometer four-lane expressway on the south side of the Fraser River, connecting Deltaport Way in Delta to 176th Street in Surrey, British Columbia. Built through a public-private partnership over 20 years, it adopted the Design-Build-Finance-Operate-Maintain (DBFOM) model between the Province of British Columbia and the FTG Fraser Transportation Group Partnership (FTG), led by ACS Infrastructure Canada Inc. and Ledcor. The project was valued at approximately CAD \$658 million. Its primary objectives included enhancing goods movement efficiency in Metro Vancouver's trade gateways, decreasing truck traffic on local roads, and strengthening regional links between major highways,

ports, and industrial zones. The SFPR has become an essential part of British Columbia's transportation infrastructure, supporting regional economic development and environmental sustainability by easing congestion and lowering emissions. Dispute resolution procedures for the project are described in Schedule 16 of the South Fraser Perimeter Road Project Agreement. These procedures establish a structured, multi-tiered approach to resolving issues amicably and ensuring disputes are managed efficiently and fairly (Kathy, 2025).

Under Schedule 16 of the Project Agreement, disputes are resolved through a tiered process beginning with amicable negotiations (Part 1). Both parties are required to earnestly attempt to resolve issues cooperatively at the lowest management level. If negotiations do not succeed, a written dispute notice prompts escalation. Part 2 allows the Independent Certifier to make binding determinations—such as Certificates of Substantial or Total Completion—that are final unless later revised by an arbitrator or court, enabling prompt milestone confirmation. If issues remain unresolved, Part 3 (Referral to Expert) permits referral to a qualified Expert from one of three panels—Design and Construction, Operations, Maintenance and Rehabilitation (OMR), or General (financial/contractual). The Expert can request submissions, carry out inspections, and deliver a written decision typically within 10 business days. These decisions are final and binding unless overturned later, with costs divided equally between the Province and the concessionaire. If disputes continue or involve Certifier decisions, Part 4 (Referral to Arbitration) provides for arbitration under the Commercial Arbitration Act (British Columbia) and BCICAC rules, either before a single arbitrator or a panel of three, chosen by the parties or appointed by the BC Supreme Court. Hearings are held in Vancouver, and the award is usually provided within 30 business days post-hearing, final and binding except for limited appeals on legal or natural justice issues. Lastly, Part 5 (Court Proceedings) permits court action for specific cases—such as appeals of arbitral awards, disputes exceeding monetary thresholds, or urgent relief like injunctions or receivership—offering

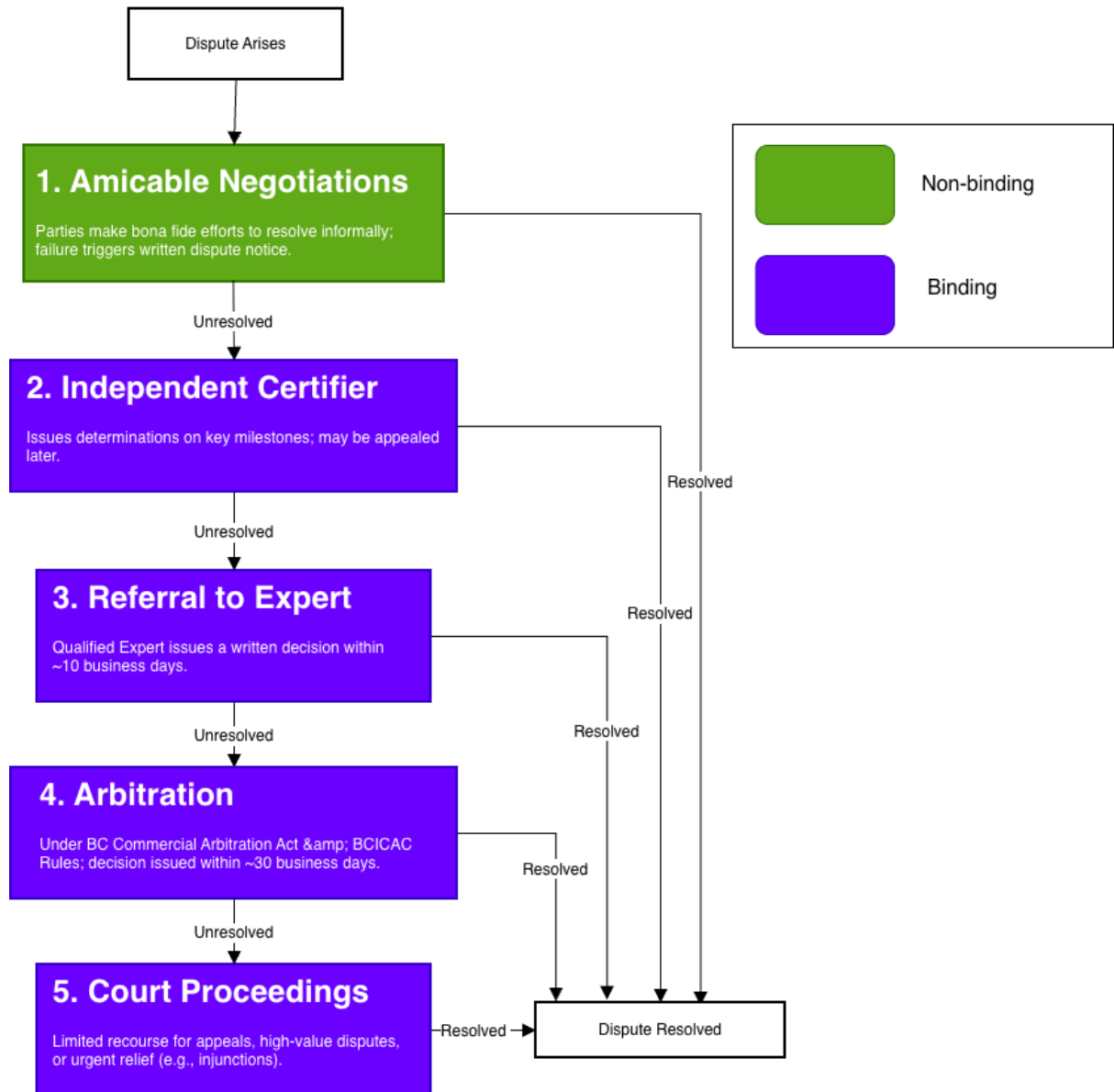
legal remedies for complex or exceptional disputes beyond expert or arbitration resolutions (Ministry of Transportation and Infrastructure, 2010).

Table 23 South Fraser Perimeter Road Dispute Resolution Process

Dispute Method	Procedure
Amicable Negotiations	Parties must make bona fide, low-level efforts to resolve disputes cooperatively. If talks fail, a written notice of dispute triggers escalation.
Independent Certifier	Certifier issues determinations on key milestones (e.g., Substantial/Total Completion). Decisions are final and binding unless later revised/overturned by arbitration or court .
Referral to Expert	Unresolved matters go to a qualified Expert from one of three panels: Design & Construction, OMR, General. Expert may seek submissions/inspections and issues a written decision ~10 business days from appointment. Decision is final and binding unless later revised/overturned; costs shared equally.
Arbitration	Invoked after Expert review or for Certifier decisions. Conducted under the Commercial Arbitration Act (BC) and BCICAC rules. Single arbitrator (or three) agreed or appointed via BC Supreme Court; hearings in Vancouver; written award ~30 business days post-hearing; final and binding with limited appeals (errors of law, natural justice).
Court Proceedings	Available only in limited cases : appeals of arbitral awards, disputes exceeding monetary thresholds, or urgent interim relief (e.g., injunction, receiver). Provides legal recourse beyond Expert/Arbitration scope.

Figure 27 Summary Chart of the South Fraser Perimeter Road Project Dispute Resolution Process

South Fraser Perimeter Road Project, British Columbia



5.3.8 Southeast Stoney Trail, Alberta

Alberta Transportation implemented the Southeast Stoney Trail Project through a Public Private Partnership (P3) using a Design–Build–Finance–Operate–Maintain (DBFOM) approach. The project, valued at CAD \$769 million, was awarded to Chinook Roads Partnership, which includes

SNC-Lavalin and Balfour Beatty Capital Inc. The concession spans 33 years and covers design, construction, financing, operation, and maintenance. It involved building a 25-kilometer segment of Calgary's ring road, featuring six interchanges, 27 bridges, and numerous flyovers. The highway aims to improve traffic flow, reduce congestion, and facilitate better movement of goods and commuters in southern Calgary. As a key connector in Alberta's highway network, the project supports regional growth and future economic development (*South East Stoney Trail Highway | ACCIONA | Business as Unusual*, n.d.; *Southeast Stoney Trail P3*, n.d.).

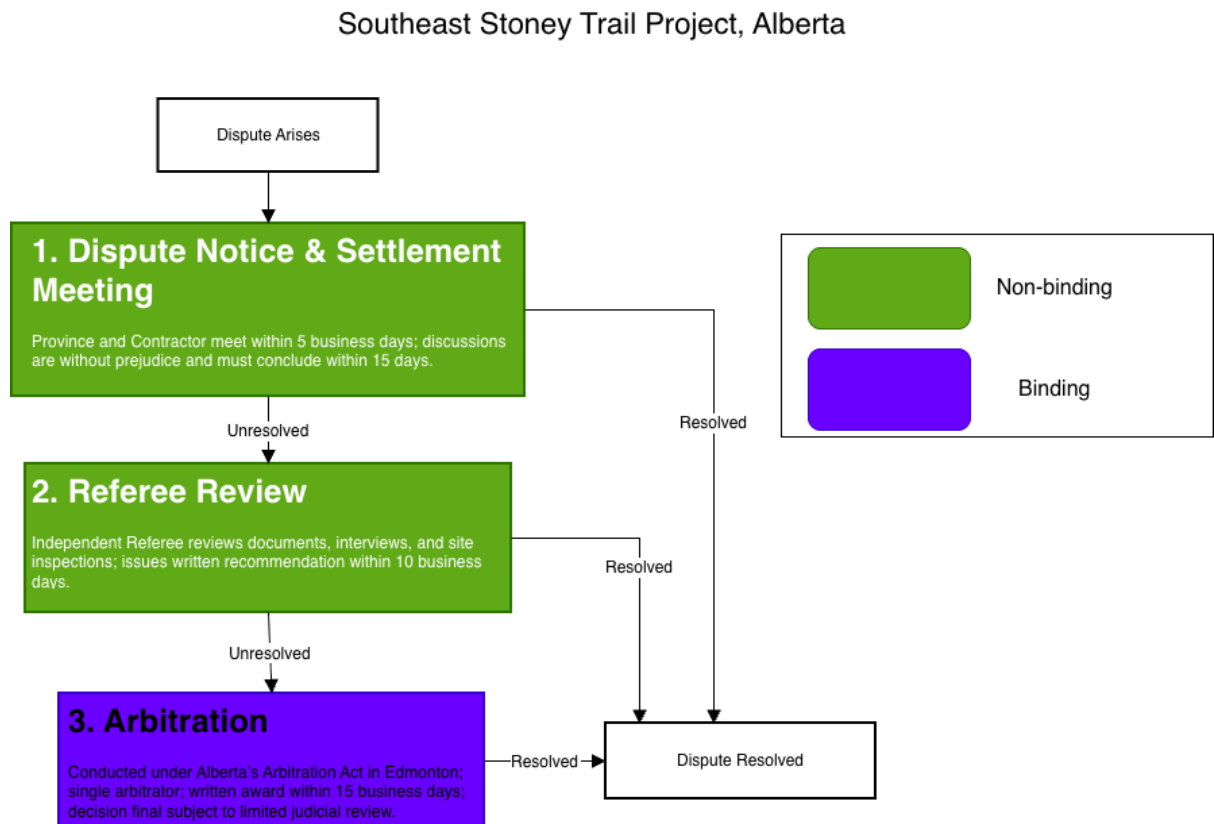
The Southeast Stoney Trail Project Agreement (Schedule 7) sets up a layered ADR process prioritizing collaboration, neutrality, and conclusive outcomes. The process starts when either party issues a Dispute Notice, prompting a Settlement Meeting within five business days involving provincial and contractor representatives. If the issue isn’t resolved within fifteen days of the notice, it automatically advances, with all discussions remaining without prejudice. At Step 2 (Referee Review), an independent Referee—jointly appointed within two years of contract signing with relevant large-scale infrastructure expertise—conducts a flexible, unbiased review, such as site inspections, interviews, and document reviews, and provides a non-binding written recommendation within ten business days to aid settlement. If disagreements persist, Step 3 (Arbitration) can be initiated under the Arbitration Act (Alberta) before a single arbitrator—either mutually selected or appointed by the Court of King’s Bench of Alberta. Arbitrations are confidential, held in Edmonton, with a typical final and binding written award issued within fifteen days after the hearing, subject to limited judicial review (Alberta Transportation, 2012).

Table 24 Southeast Stoney Trail Dispute Resolution Process

Dispute Method	Procedure
Dispute Notice & Settlement Meeting	Either party issues a Dispute Notice. Within 5 business days, Province and Contractor representatives hold a Settlement Meeting to seek resolution. If unresolved within 15 days of the notice, the matter advances. Discussions are without prejudice.

Referee Review (Non-binding)	An independent Referee (jointly appointed within 2 years of contract signing; impartial and experienced in major infrastructure) conducts a flexible review (documents, interviews, site inspections) and issues a written recommendation within 10 business days. Recommendation is non-binding and intended to encourage settlement.
Arbitration (Final & Binding)	If still unresolved, either party initiates binding arbitration under the Arbitration Act (Alberta) before a single arbitrator (mutually chosen or appointed by the Court of King's Bench of Alberta). Hearings are confidential, held in Edmonton, and conclude with a written award within 15 business days of the hearing; decision is final and binding subject to limited judicial review.

Figure 28 Summary Chart of the Southeast Stoney Trail Project Dispute Resolution Process



5.3.9 Valley Line West LRT Project, Alberta

The Valley Line West LRT is a 14-mile light rail extension in Edmonton, Alberta, developed through a Design–Build–Finance–Operate–Maintain (DBFOM) P3 model. Construction began in 2021, with an estimated cost of approximately \$2.6 billion. The project involves the City of Edmonton

as the public sponsor and Marigold Infrastructure Partners, which includes Colas Infrastructure, Parsons Corporation, and Fengate Capital, as the private partner. This extension extends the Valley Line westward from downtown Edmonton, introducing 14 new stops and two major transfer stations. It was initiated to alleviate growing congestion, address current transit limitations, and promote sustainable transportation in a rapidly developing corridor. By offering frequent and reliable rail service, the Valley Line West aims to reduce commute times, lower greenhouse gas emissions, and support regional economic development (Alberta, n.d.-b; *Valley Line - West* | *City of Edmonton*, n.d.).

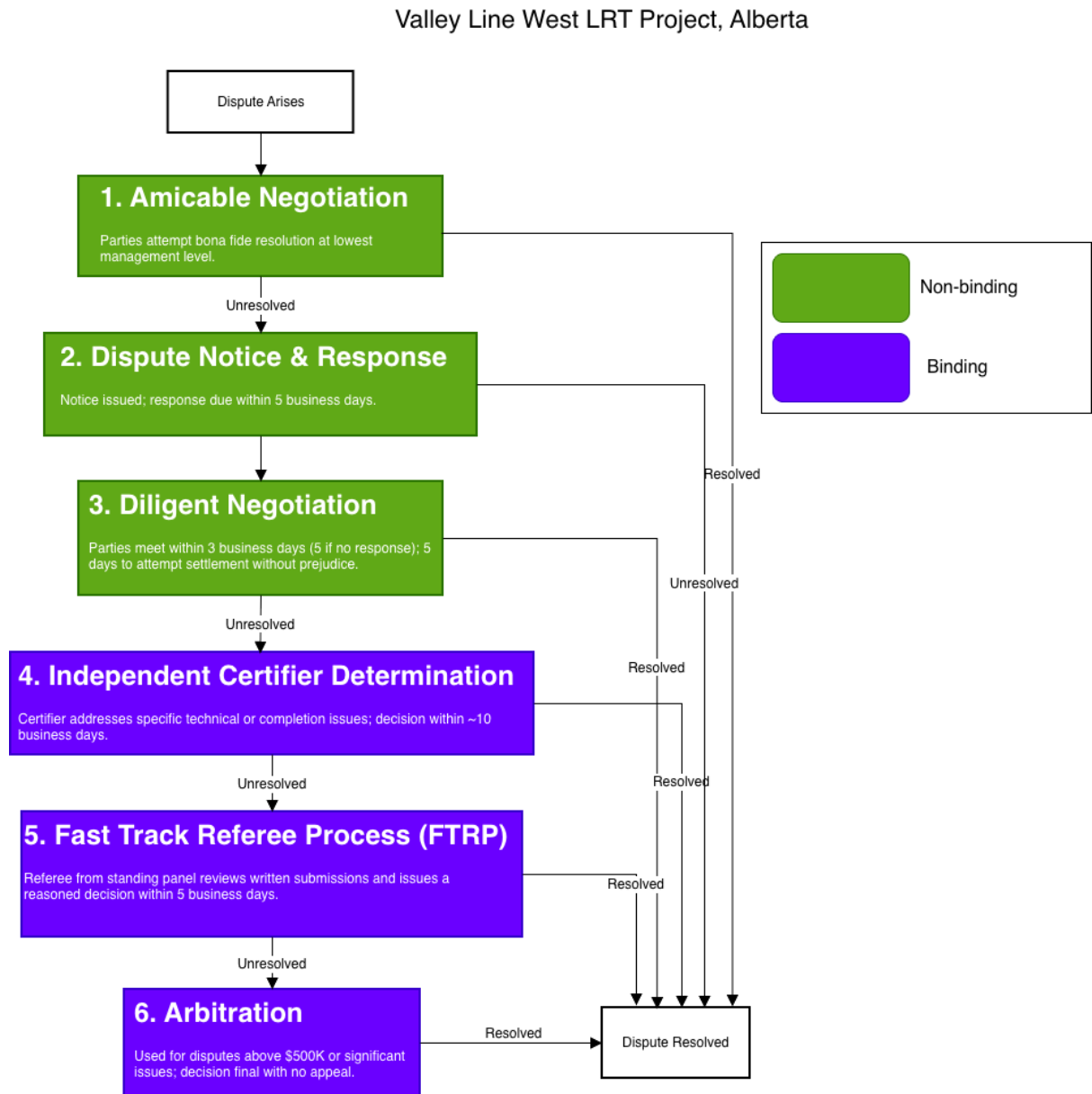
The Project Agreement outlines a structured process according to Schedule 20 - Dispute Resolution Procedure in the concession agreement. It starts with informal negotiations at the lowest management level, requiring sincere efforts before escalation. If unresolved, either party can issue a Dispute Notice detailing the issue, desired relief, and grounds, with a response due within five business days. After the response, or if none is given, the parties' representatives must meet within three business days (or five if no response), and negotiate diligently for up to five business days, extendable by agreement. Certain issues—such as construction deficiencies, completion problems, or specifically assigned items—are referred to the Independent Certifier, who generally provides a determination within ten business days. If no resolution is reached, either party can invoke the Fast Track Referee Process (FTRP) within five days, appointing a Referee from established panels or through the ADR Institute of Alberta if no agreement exists. The FTRP involves streamlined written submissions, including initial, rebuttal, and surrebuttal, followed by Best and Final Offers (BAFOs), culminating in a reasoned decision by the Referee within five days. This decision is binding unless arbitration is pursued in qualifying cases. Disputes over \$500,000, or involving significant non-monetary issues or challenges to the Independent Certifier's determination, can proceed directly to final and binding arbitration without appeal rights. To facilitate prompt resolution, four

standing referees—two technical and two commercial—are appointed for the project’s duration and are engaged based on their expertise (City of Edmonton, 2020).

Table 25 Valley Line West LRT Project Dispute Resolution Process

Dispute Method	Procedure
Amicable Negotiation (Lowest Level)	Parties must first make bona fide efforts to resolve issues at the lowest management level before any formal step.
Notice of Dispute & Response	Either party may issue a Dispute Notice stating issue, relief, and grounds; receiving party must respond within 5 business days.
Diligent Negotiation	Within 3 business days of the response (5 if no response), representatives meet; they have 5 business days (extendable by agreement) to attempt settlement without prejudice.
Independent Certifier Determination	Certain matters (e.g., construction deficiencies, completion issues, specified items) are referred to the Independent Certifier, who typically issues a determination within 10 business days.
Fast Track Referee Process (FTRP)	If talks fail, within 5 business days either party may request a Referee (from standing technical/commercial panels; if no agreement, via ADR Institute of Alberta). Compressed written submissions (initial → rebuttal → surrebuttal) followed by BAFOs; Referee issues a reasoned decision within 5 business days of BAFOs. Decision is binding, subject only to arbitration in qualifying cases.
Arbitration (Final & Binding)	Available for disputes > \$500,000, significant non-monetary issues, or challenges to Independent Certifier decisions; final and binding with no appeal rights.
Standing Referee Panels	<i>Four standing referees (two technical, two commercial) are appointed for the project duration and engaged by subject matter as needed.</i>

Figure 29 Summary Chart of the Valley Line West LRT Project Dispute Resolution Process



5.3.10 Regina Bypass, Saskatchewan

The Regina Bypass Project in Saskatchewan stands as one of the largest transportation infrastructure investments in the province. Delivered through a public-private partnership (P3) employing a Design-Build-Finance-Operate-Maintain (DBFOM) model, it was awarded by the Government of Saskatchewan via SaskBuilds and the Ministry of Highways and Infrastructure. The

project cost approximately CAD \$1.88 billion and was executed by Regina Bypass Partners, which includes VINCI Concessions, Graham Construction, Parsons Canada, and Connor, Clark & Lunn Infrastructure. It entailed constructing 61 kilometers of new four-lane highway, 37 kilometers of service roads, 12 interchanges, and 33 bridges, forming a complete bypass around Regina. The primary goals were to enhance driver safety, reduce congestion to improve traffic flow, and facilitate efficient goods movement. Additionally, it stimulated economic growth in southern Saskatchewan and strengthened connections along vital trade routes such as the Trans-Canada Highway and Highway 11 (Government of Saskatchewan, 2015).

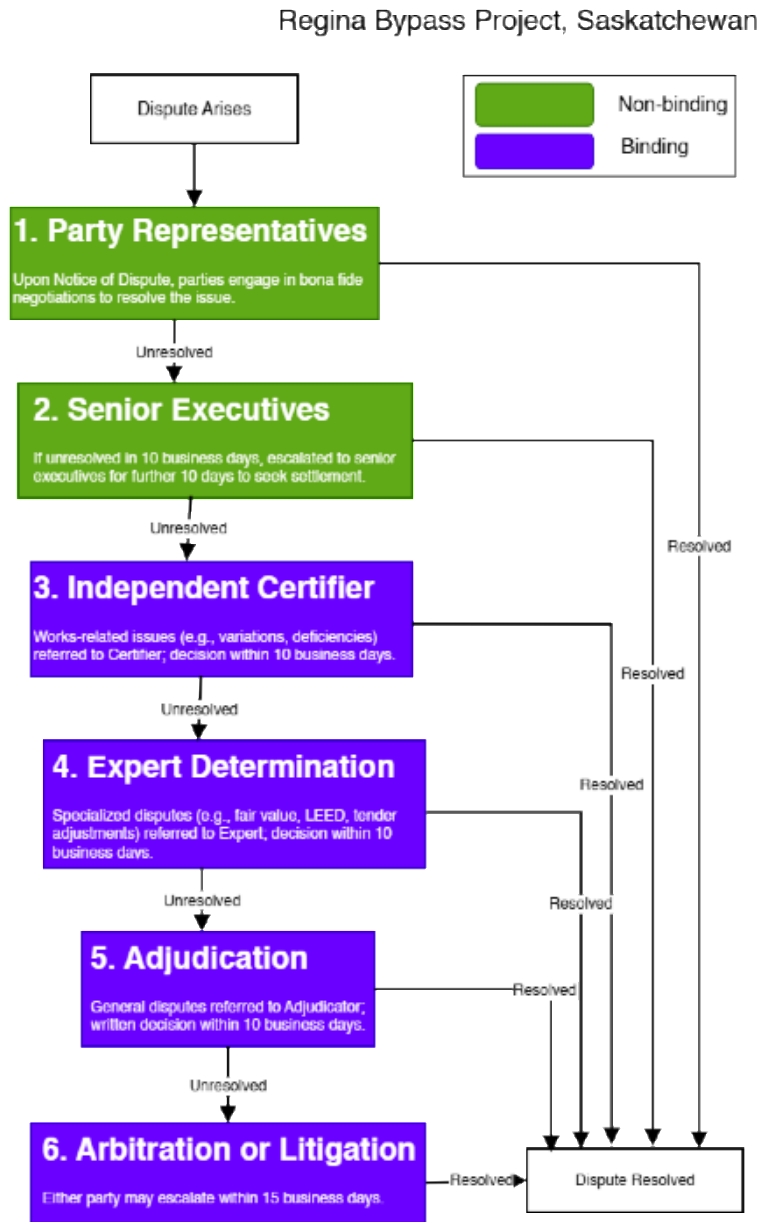
The project dispute process follows steps outlined in Schedule 22 dispute resolution procedure of the concession agreement. Upon receiving a Notice of Dispute, the Ministry Representative and Project Co-Representative are required to negotiate in good faith. If unresolved after 10 business days, the dispute escalates to senior executives, who have an additional 10 days to reach a resolution. Works-related issues are initially referred to the Independent Certifier, who responds within 10 days. If still unresolved, certain matters are subject to Expert Determination within 10 days, with their decisions being binding unless overturned. Other disputes may be referred to an Adjudicator after 15 days of negotiations, with the adjudicator's decision final within 10 days. Either party can then request arbitration within 15 days, with arbitrators issuing a decision in about 20 days, or pursue litigation in cases involving high-value or emergency issues (SaskBuilds & Procurement, n.d.).

Table 26 Regina Bypass Project Dispute Resolution Process

Dispute Method	Procedure
Party Representatives (Amicable Resolution)	Upon a Notice of Dispute, Ministry Representative and Project Co Representatives promptly engage in bona fide negotiations to resolve the issue.
Senior Executives (Escalation)	If representatives cannot resolve the dispute within 10 Business Days, it escalates to senior executives who have 10 Business Days (or as agreed) to seek settlement.

Independent Certifier — Works-Related Disputes	Issues tied to the Works (e.g., Variations, Minor Deficiencies, certification matters listed in Schedule 27) are referred first to the Independent Certifier, who must issue a determination within 10 Business Days.
Expert Determination — Special Categories	Specialized disputes (e.g., “Liquid Market”, fair-value assessments, qualifying tender adjustments, LEED issues) go to an Expert if senior executives cannot resolve within 10 Business Days. The Expert issues a decision within 10 Business Days of appointment; binding unless later overturned in arbitration/litigation.
Adjudication — General Disputes	Disputes not assigned to the Certifier or Expert and still unresolved after 15 Business Days of executive negotiation may be referred to an Adjudicator (by agreement or Ontario Superior Court). A written decision is due within 10 Business Days; binding in the interim unless later overturned.
Arbitration or Litigation (Final Stage)	Within 15 Business Days of an Adjudicator’s, Expert’s, or specified Certifier decision, either party may require arbitration or litigation. Arbitration aims to deliver a final, binding award within 20 Business Days of the hearing. Litigation may be chosen where Schedule 27 criteria are met (e.g., high-value disputes, public safety, excluded categories).

Table 27 Summary Chart of the Regina Bypass Project Dispute Resolution Process



5.4 Case Study Analysis and Discussion

The table below summarizes all projects and the different ADR methods included in their multi-tier dispute resolution clauses.

The table below summarizes the dispute resolution methods used in the P3 projects.

Table 28 P3 Projects Dispute Resolution Methods

Project Name	Negotiation/ Settlement Meeting	Steering Committee/ Executive Negotiation	Mediation	Technical/Dispute Review Board (DRB)	Disputes Board	Independent Certifier	Expert Determination	Adjudication	Referee	Arbitration	Administrative Hearing (SOAH)	Litigation/ Court
Elizabeth River Tunnels, Virginia	✓	✓	✓	✓								✓
SH 130, Texas	✓	✓	✓		✓						✓	
SH 288, Texas	✓	✓	✓		✓						✓	
Purple Line, Maryland				✓								✓
I-95/395 HOV/HOT Lanes, Virginia	✓	✓										✓
Central 70, Colorado	✓	✓		✓								
North Tarrant Express, Texas	✓	✓	✓		✓						✓	

Puerto Rico PR-22 and PR-5	✓	✓	✓							✓		✓
Ohio River Bridges - East End Crossing, Kentucky	✓	✓	✓							✓		✓
I-595 Corridor Roadway Improvements, Florida	✓			✓								✓
Ontario Line RSOM, Ontario	✓	✓		✓				✓		✓		✓
Southwest Calgary Ring Road, Alberta	✓								✓	✓		
Hazel McCallion Line (Hurontario LRT), Ontario	✓	✓				✓	✓	✓		✓		✓
Port Mann / Highway 1 Improvement Project, BC	✓					✓	✓			✓		✓
Tłıchq All- Season Road	✓					✓			✓	✓		✓

Project, NWT												
Northeast Anthony Henday Drive, Alberta	✓								✓	✓		
South Fraser Perimeter Road, BC	✓					✓	✓			✓		✓
Southeast Stoney Trail, Alberta	✓								✓	✓		
Valley Line West LRT, Alberta	✓					✓			✓	✓		
Regina Bypass, Saskatchew an	✓	✓				✓	✓	✓		✓		✓

5.4.1 Cross-Case and Cross-Jurisdictional Synthesis of ADR in U.S. DBFOM P3 Projects

5.4.1.1 *Jurisdictional Architecture (How Place Influences Process)*

Texas has a mid-level Disputes Board and a limited administrative appeal process via SOAH, which speeds up resolution but restricts public-law oversight through ALJ review and executive decisions. Virginia relies on negotiations and a Steering Committee before litigation in the Richmond Circuit Court. The Elizabeth River Tunnels (ERT) agreement includes a non-binding Technical Requirements Panel and optional mediation, keeping court authority in reserve. Maryland assigns disputes with Contracting Officers to non-binding Technical and Financial Dispute Review Boards (DRBs), then to the MDOT Secretary, before involving courts, combining technical expertise with policy oversight. Colorado's Central 70 project separates commercial and technical issues, with advisory panels providing opinions after settlement efforts and conference deadlines, emphasizing early expert input. Florida's I-595 uses a non-binding DRB that can become temporarily binding, with a strict protest process and continuous work during disputes. Indiana's Ohio River Bridges – East End project employs partnering and informal steps leading to advisory arbitration, which becomes binding if not rejected timely, with high-value claims sometimes bypassing steps. Puerto Rico's civil law system channels disputes through mediation or an Independent Engineer for technical matters, culminating in final arbitration, with courts mainly enforcing those decisions.

The tables below summarize the ADR architecture of ten U.S. projects across eight dimensions. The overview shows a common foundation but no uniform structure. Project-level negotiation occurs in nine of the ten projects, and senior-executive or steering-committee review in eight, indicating that the initial stage of the U.S. process—informal negotiation followed by oversight—is widely used. Beyond this, the architecture varies: mediation is present in six projects, a technical or dispute review board in four, and the Texas Disputes Board and SOAH administrative hearing in three each, showing state-specific models rather than a shared design. The most

significant trend is the dominance of non-binding mid-tier mechanisms: apart from the Texas Disputes Board, Florida's temporarily binding DRB, and Indiana's conditionally binding arbitration, binding resolution typically occurs only at the final forum. This is most often a court—six of ten projects—with litigation limited to specific venues like the Richmond Circuit Court. Texas directs final review to SOAH, and Puerto Rico concludes with binding arbitration. Overall, the table depicts a system where early, relationship-focused tiers are consistent nationwide, but the mechanisms for resolving disputes are shaped by each state's legal and institutional context.

Table 29 Synthesis of ADR architecture in U.S. DBFOM P3 projects

Dimension	Synthesis across the U.S. portfolio
Common ADR methods (frequency across 10 projects)	Project-level negotiation (9/10); senior-executive / steering-committee review (8/10); mediation (6/10); litigation / court (6/10); technical or dispute review board (4/10); Texas binding Disputes Board (3/10); SOAH administrative hearing (3/10, Texas only); binding arbitration (2/10, Puerto Rico and Ohio River Bridges).
Typical phases / escalation steps	Generally three to four tiers: (1) project-level good-faith negotiation; (2) senior-executive or steering-committee review; (3) a board, panel, or optional mediation; and (4) a terminal forum — court, SOAH (Texas), or arbitration. Several projects omit a third-party tier and proceed from executive review directly to court.
Binding vs. non-binding character	Mid-tier mechanisms are predominantly non-binding (advisory DRBs, technical/commercial panels, mediation). Binding force generally arrives only at the terminal forum (court or arbitration). Exceptions: Texas Disputes Boards are binding with narrow appeal; Florida's DRB can become temporarily binding; Indiana's advisory arbitration becomes binding if not rejected within 30 days.
Typical timelines	Short, fixed windows but not standardized across states: roughly 10 days at project level, 7–10 days for executive/steering-committee review, ~20 days to a DRB hearing, and ~15 days for a recommendation. Litigation timelines are open-ended.
DRB / board structure	Boards or panels appear in a minority of projects. Maryland uses dual non-binding Technical and Financial DRBs; Colorado separates Commercial and Technical advisory panels; Florida uses a regional/statewide DRB that can become temporarily binding; Texas uses a mid-level binding Disputes Board. Panels are typically three members; standing constitution is inconsistent.
Terminal forum	Court / litigation is the most common terminal forum (6/10), with exclusive venues specified (e.g., Richmond Circuit Court). Texas channels final review to SOAH; Puerto Rico ends in binding arbitration. Statutory limits on binding arbitration for public entities in several states make litigation the default backstop.

Critical elements	Mandatory good-faith negotiation prerequisite; senior-executive gatekeeping before escalation; continue-work and undisputed-payment clauses (explicit in Florida and Indiana); jurisdiction-specific statutory constraints shaping the final tier.
Distinctive characteristics / notes	High state-by-state fragmentation in ADR design; no statutory construction adjudication; the Independent Certifier role is largely absent; court-terminal models (VA, FL, IN) generate public precedent; the Texas SOAH administrative appeal is unique among the sample.

5.4.1.2 Contractual ADR Architecture: Five Families

Five ADR “families” are commonly identified across different cases. Texas emphasizes a binding Disputes Board with limited appeals, aiming for quick resolution and consistency. Virginia focuses on negotiation and gatekeeping via a Steering Committee before cases might escalate to court, with optional technical advice (ERT). Maryland uses two non-binding Dispute Review Boards (DRBs) and includes agency-head review, combining technical, commercial, and policy oversight. Colorado offers separate paths for commercial and technical issues and employs advisory opinions to facilitate settlements. The arbitration-focused family, such as Puerto Rico’s PR22/PR5 (final arbitration), differs from Florida’s I-595 (advisory DRB that may lead to litigation), using arbitration for speed, expertise, and confidentiality where permitted.

Table 30 Five ADR Families in U.S. DBFOM P3 Projects

ADR family	Representative project(s)	Core mechanism	Bindingness	Terminal forum	Defining characteristic
Texas binding Disputes Board	SH 130, SH 288, NTE	Mid-level binding Disputes Board with limited appeal, backed by SOAH administrative review	Binding	SOAH (administrative)	Speed and consistency; narrow, record-based appeal restricting public-law oversight
Virginia negotiation & gatekeeping	ERT, I-95/395	Project-level negotiation + Steering Committee gatekeeping; optional non-binding Technical Requirements Panel (ERT)	Non-binding until court	Court (Richmond Circuit)	Managerial control; court authority held in reserve
Maryland dual-DRB +	Purple Line	Two non-binding DRBs (Technical and Financial)	Non-binding	Court	Combines technical, commercial, and policy oversight

agency review		followed by MDOT Secretary review			
Colorado model (dual panels + advisory opinions)	Central 70	Separate commercial and technical advisory panels issuing opinions after settlement efforts	Non-binding (advisory)	Escalation / settlement	Early expert input; bifurcated commercial vs. technical paths
Arbitration-focused	PR-22/PR-5 (contrast: I-595, FL)	Mediation / Independent Engineer then final arbitration (PR); advisory DRB then litigation (FL)	Binding (PR arbitration)	Arbitration (PR) / Court (FL)	Arbitration for speed, expertise, and confidentiality where permitted

5.4.2 Cross-Case and Cross-Jurisdictional Synthesis of ADR in Canada DBFOM P3 Projects

The Canadian portfolio covers Ontario, Alberta, British Columbia, Saskatchewan, and the Northwest Territories, focusing on rail systems, ring roads, and corridor upgrades managed through DBFOM. Each project features a multi-tiered ADR ladder to quickly tackle issues and reach binding resolutions. The analysis examines two perspectives: (i) provincial legal frameworks, including Ontario’s Construction Act adjudication, arbitration laws, and appointment procedures; and (ii) contractual ADR arrangements, covering hierarchical levels, timeframes, enforceability, venue and appointment controls, and provisions for ongoing work and payments. These perspectives explain why tools like referees, experts, adjudication, and IC determinations vary in function across provinces and how agreements are designed to safeguard schedules and cash flow.

The tables below summarize the synthesis for ten Canadian projects, highlighting clear differences from the U.S. portfolio in terms of frequency. Both negotiation and binding arbitration feature in all ten projects, forming a consistent framework — each Canadian agreement begins with good-faith negotiations and ends with commercial arbitration under provincial law. Between these stages, the portfolio employs unique intermediate mechanisms mostly absent from the U.S. example: the Independent Certifier, used for binding milestone decisions in six projects; the referee, used in five; and expert determination in four. Statutory adjudication is present in the Ontario and

Saskatchewan projects, reflecting their Construction Act regimes. The key characteristic is the binding-unless-arbitrated approach of the Canadian mid-tier: decisions by the Independent Certifier, experts, and combined rulings take effect immediately and are only displaced if arbitration is pursued. Alberta's Fast-Track Referee Process provides outright binding decisions. This system enables quick, conclusive resolution of most disputes at an intermediate level, reserving only the most complex or high-value cases for final arbitration. The observed standardization arises from the provincial frameworks—like Infrastructure Ontario, Partnerships BC, SaskBuilds, and Alberta Transportation—that govern these agreements.

Table 31 Synthesis of ADR architecture in Canadian DBFOM P3 projects

Dimension	Synthesis across the Canadian portfolio
Common ADR methods (frequency across 10 projects)	Project-level negotiation (10/10); binding arbitration (10/10); Independent Certifier determinations (6/10); referee review (5/10); expert determination (4/10); senior-executive review (3/10); statutory adjudication (3/10, Ontario and Saskatchewan); combined dispute board (1/10, Ontario Line).
Typical phases / escalation steps	Standardized multi-tiered ladder: (1) amicable negotiation at the lowest management level; (2) Independent Certifier, expert, or referee determination; (3) statutory adjudication (Ontario, Saskatchewan); and (4) final binding arbitration. Courts are reserved for appointments, enforcement, and urgent relief.
Binding vs. non-binding character	Mid-tier mechanisms are frequently binding-unless-arbitrated (Independent Certifier milestone decisions, expert determinations, combined boards). Alberta's referee recommendation is non-binding but fast; Edmonton's Fast-Track Referee Process yields binding mid-tier decisions. The terminal arbitration award is final and binding with limited appeal.
Typical timelines	Highly standardized in business days: ~5 days for a settlement meeting, ~10 days for a referee/IC/expert decision, 10–30 days for awards, and ~15–30 days for an arbitral decision after hearing. Timeframes are fixed by provincial template and generally not party-extendable.
DRB / board structure	The Ontario Line uses a Combined Dispute Board (two technical members plus a legal chair) appointed at financial close. Alberta projects use standing referees (Valley Line West maintains four — two technical, two commercial). British Columbia uses topic-specific expert panels (Design & Construction; Operations, Maintenance & Rehabilitation; General).
Terminal forum	Commercial arbitration is the near-universal terminal forum (10/10), seated and administered under provincial statute (e.g., BCICAC in British Columbia; Arbitration Act in Alberta and Ontario). Litigation is reserved for high-value or urgent matters (6/10).
Critical elements	Provincial standard-form frameworks (Infrastructure Ontario, Partnerships BC, SaskBuilds, Alberta Transportation); Independent Certifier milestone

	determinations; statutory construction adjudication in Ontario and Saskatchewan; predetermined venue, seat, and appointment authorities.
Distinctive characteristics / notes	High cross-provincial standardization; statutory adjudication for payment disputes; a prominent Independent Certifier role; arbitration-terminal architecture favoring confidentiality and expert decision-makers; fast, binding mid-tier determinations that defer only complex matters to arbitration.

5.4.2.1 *Provincial Architecture (How Place Shapes Process)*

Ontario utilizes statutory adjudication to resolve payment disputes in construction, supported by standing boards and final arbitration. For the Ontario Line – RSOM package, a Combined Dispute Board, consisting of two technical members and a legal chair, is appointed at financial close and provides binding decisions unless challenged through arbitration; courts mainly handle appointments and urgent matters. The Hurontario LRT employs various dispute resolution methods, including Independent Certifier (IC) determinations, Expert Determinations, adjudication, and arbitration, with response times ranging from 10 to 30 business days.

Alberta’s highway projects—including the SW Calgary Ring Road, NE Anthony Henday, and SE Stoney Trail—follow a specific process: notice, a five-day settlement period, a non-binding referee recommendation within 10 days, and final arbitration taking about 15 days. Edmonton’s Valley Line West employs a Fast Track Referee Process (FTRP), which offers binding decisions and arbitration options for complex issues, supported by standing referees and a BAFO procedure.

British Columbia relies on IC milestone decisions and Expert panels (Design & Construction, OMR, General), which are binding unless overturned through arbitration per BCICAC rules. Courts handle appointments and limited appeals. Saskatchewan’s Regina Bypass uses Ontario’s multi-step process: beginning with IC/Expert review, then adjudication, and ultimately arbitration or litigation for high-value or urgent cases. The Northwest Territories employs a swift referee process followed by arbitration, with access to emergency court relief.

5.4.2.2 ADR Architectures Observed (Families)

Six recurring architectures appear across the portfolio: (1) Ontario’s adjudication, standing board, and arbitration; (2) Alberta’s referee and arbitration; (3) Alberta’s Fast-Track Referee Process with binding mid-tier decisions; (4) British Columbia’s IC, expert panels, and arbitration; (5) Saskatchewan’s IC/Expert and adjudication hybrid; and (6) Northern territories’ fast-track referee and arbitration or litigation. Each model specifies venue and appointment procedures for each location (Toronto, Edmonton, Vancouver, Yellowknife).

Table 32 Six ADR Architectures in Canadian DBFOM P3 Projects

ADR architecture	Province / territory	Representative project(s)	Core mid-tier mechanism	Terminal forum	Defining characteristic
Adjudication + standing board + arbitration	Ontario	Ontario Line RSOM, Hurontario	Statutory adjudication (Construction Act) + Combined Dispute Board (2 technical + legal chair)	Arbitration	Statutory adjudication; standing board binding unless arbitrated
Referee + arbitration	Alberta	SW Calgary Ring Road, NE Anthony Henday, SE Stoney Trail	Non-binding referee recommendation (~10 business days) after a 5-day settlement meeting	Arbitration	Fast referee filter; expedited, conclusive arbitration
Fast-Track Referee Process (binding mid-tier)	Alberta (Edmonton)	Valley Line West	FTRP with written submissions and Best-and-Final Offers; four standing referees (2 technical, 2 commercial)	Arbitration	Binding mid-tier decisions; standing specialised referees
IC + expert panels + arbitration	British Columbia	Port Mann / Hwy 1, South Fraser Perimeter Road	Independent Certifier milestone decisions + expert panels (Design & Construction; OMR; General)	Arbitration (BCICAC)	IC binding milestones; topic-specific expert panels
IC/Expert + adjudication hybrid	Saskatchewan	Regina Bypass	IC / Expert determination, then adjudication after 15 days of negotiation	Arbitration / litigation	Combines binding IC/expert review with adjudication
Fast-track referee + arbitration/litigation	Northwest Territories	Tłı̨chʔ All-Season Road	Swift referee process following a 5-day settlement meeting	Arbitration; emergency court relief	Expedited resolution with emergency court access

5.4.2.3 Core Mechanisms: Escalation, Time Limits, Bindingness, and Forum Control

All agreements require good-faith negotiation as a prerequisite, with strict timelines typically ranging from five to fifteen business days for meetings or referrals, and ten to thirty business days for decisions or awards. Enforceability varies by jurisdiction: Ontario utilizes interim-binding adjudication and standing boards whose decisions are binding unless challenged via arbitration;

Alberta's standard template preserves the referee's advice but guarantees swift, conclusive arbitration; British Columbia makes IC/Expert outcomes binding unless overturned; Saskatchewan combines IC/Expert binding with adjudication; and the Northwest Territories maintain the referee's advice while expediting binding arbitration. Venue and appointment procedures are predetermined (e.g., Ontario Superior Court, ADR Institute of Alberta, BCICAC), ensuring predictability and regulating transaction costs.

5.4.3 Canada vs. United States ADR Architectures in DBFOM P3 Projects

Canada's portfolio exhibits a robust statutory and arbitral approach: Ontario and Saskatchewan utilize Construction Act adjudication for payment disputes during the project phase; most provinces resolve disputes through commercial arbitration, such as BCICAC in British Columbia, while courts are reserved for urgent relief, appointments, and limited appeals. Alberta emphasizes referees and expedited arbitration, with Edmonton's Valley Line West implementing a Fast Track Referee Process (FTRP) that delivers binding decisions at a mid-tier level. British Columbia formalizes the roles of the Independent Certifier (IC) and topic-specific Expert panels, with their decisions being binding unless overturned in arbitration.

The U.S. portfolio displays greater diversity. Texas uses binding Disputes Boards and has a narrow, record-based administrative appeal process to the State Office of Administrative Hearings (SOAH). Virginia emphasizes managerial control and opts for exclusive court venues like the Richmond Circuit Court. Maryland integrates dual, non-binding Dispute Resolution Boards (DRBs) alongside an agency appellate ladder. Colorado employs specialized commercial and technical panels capable of issuing advisory opinions. Florida depends on DRBs and incorporates strong continuity clauses. Indiana utilizes advisory arbitration that becomes binding unless rejected within 30 days. Puerto Rico finalizes disputes with binding arbitration, with courts only enforcing the decisions.

The table highlights the features shared by both national portfolios, which are as important for framework development as their differences. These common traits reveal the design elements that garner consensus across two distinct legal cultures. Eight key similarities are identified: both systems mandate good-faith negotiation as an initial step, incorporating it into a multi-tiered escalation process rather than a single step; both escalate unresolved disputes to a senior or executive level, adding decision-making authority and a commercial outlook; both depend on technical neutrals—such as the U.S. DRB, technical panel, or the Canadian Independent Certifier, expert, and referee—to handle technical matters; both enforce strict, short deadlines at each stage to maintain the construction schedule; and both require continue-work and undisputed-payment clauses, which are crucial for lenders’ cash-flow protection. Additionally, both specify forums and appointment authorities beforehand and rely on binding mechanisms to conclude disputes. The recurrence of these eight elements across different jurisdictions with varying architectures strongly suggests they are robust, transferable principles—forming a solid foundation for a generalized framework.

Table 33 Commonalities in ADR architecture across U.S. and Canadian DBFOM P3 projects

Dimension	Shared characteristic
Negotiation as mandatory first step	Every agreement in both countries requires good-faith, project-level negotiation before any escalation, preserving the relationship and filtering minor disputes early.
Multi-tiered escalation ladders	Both portfolios rely on graduated tiers that move from informal negotiation through third-party determination to a binding terminal forum, rather than single-step resolution.
A senior / executive escalation tier	Both provide for elevation above the project team — U.S. steering committees and executive negotiation; Canadian senior-executive review — to introduce decision authority and commercial perspective.
Reliance on technical neutrals	Both depend on subject-matter experts to resolve technical disputes — U.S. DRBs and technical/commercial panels; Canadian Independent Certifiers, expert panels, and referees.
Fixed, short timelines	Both impose defined day-count windows at each tier to protect the construction schedule and prevent disputes from stalling the works.

Continue-work and undisputed-payment clauses	Both mandate continued performance and payment of undisputed amounts during a dispute — a provision lenders treat as essential to protect cash flow.
Predetermined forum and appointment rules	Both specify venues, seats, and appointment authorities in advance to ensure predictability and limit threshold disputes over process.
A binding terminal mechanism	Both portfolios conclude in a binding forum — court or arbitration — ensuring finality where lower tiers fail to resolve the dispute.

5.4.3.1 *Explaining the divergence: institutional, legal, and cultural drivers*

The differences outlined above are rooted in five clear drivers, rather than mere drafting choices. The most basic factor is institutional structure. Canadian provinces manage P3 projects as a consistent program through dedicated agencies—such as Infrastructure Ontario, Infrastructure BC, SaskBuilds, and Alberta Transportation—that use standard agreements across their ongoing pipelines. This leads to convergence in ADR clauses through template inheritance (Siemiatycki, 2015). In contrast, the U.S. lacks a federal procurement equivalent: authority is given to individual state DOTs under state laws, with most states negotiating P3s sporadically and tailoring each deal, resulting in fragmentation (Geddes and Wagner, 2013). Another driver is legal mandates: states like Virginia and Florida prohibit public entities from binding arbitration, requiring court-based resolution, while Texas's administrative law streamlines arbitration through SOAH; Canadian provinces, with broader jurisdiction over infrastructure and unified arbitration laws, face no such barriers. Third, Canada's mid-tier mechanisms reflect its Commonwealth roots: statutory adjudication in Ontario and Saskatchewan borrows from the UK's Housing Grants, Construction and Regeneration Act 1996, and the Independent Certifier stems from the certifying-engineer tradition of ICE and FIDIC practices (Bunni, 2013)—channels not found in U.S. practices. Fourth, the two systems adhere to different accountability standards: U.S. agencies, subject to open-records laws

and political expectations, favor public dispute resolution, explaining their court-based approach. Canadian agencies, akin to Crown corporations, typically operate within confidential arbitration. Fifth, Canada's program model has fostered repeat project-finance lenders demanding certainty on critical cash-flow issues, leading to fast, binding milestone decisions within provincial templates. U.S. projects, with varied financing structures, lack such standardization. These drivers are interconnected: the institutional setup is the transmission pathway through which legal, cultural, and financial influences manifest. The provincial agencies — and the absence of U.S. equivalents — transform Commonwealth legal inheritance, lender preferences, and arbitration laws into standardized clauses, while statutory differences and litigation cultures contribute to fragmentation. This suggests a policy insight discussed later: because these differences are institutionally passed down, a federal model clause program in the U.S. (via FHWA/FTA guidance) could reduce divergence without infringing on state authority.

5.4.3.2 Key Contrasts and Their Significance

Canada (ON/SK) adopts a swift adjudication process early on, with an interim-binding outcome. In contrast, U.S. cases do not feature adjudication; instead, they depend on Dispute Review Boards (DRBs) or panels. Texas stands out by offering a dedicated administrative appeal through SOAH, which combines prompt resolution with public-law oversight.

Terminal forum and transparency vary across jurisdictions. Canadian cases mostly conclude with arbitration, maintaining confidentiality and led by experts; courts mainly handle appointment and enforcement of decisions. In contrast, U.S. cases differ: some are resolved in court (VA/FL/IN), others through administrative decisions (TX), and some via arbitration (PR). This diversity leads to more public precedents in states where courts dominate and increased confidentiality in regimes favoring arbitration.

The role of the Independent Certifier (IC) and expert specialization varies by country. In Canada, the IC plays a crucial role in milestone decisions and follows Expert or Referee pathways with specific focus areas such as design, OMR, general, or distinguishing between technical and commercial referees. In the U.S., specialization is exemplified by Maryland’s Technical/Financial Dispute Review Boards (DRBs) and Colorado’s Commercial/Technical Panels. However, the use of IC-style milestone decision-makers is less prominent in dispute resolution.

Bindingness is present in the mid-ladder context. Canada often relies on binding decisions unless they are swiftly arbitrated—such as those by IC, Expert panels, or boards—or are specifically binding for certain categories like FTRP. In the U.S., bindingness mainly occurs in Texas, through binding boards, and in Puerto Rico, via terminal arbitration. Indiana shows a conditional bindingness where advisory awards become binding unless rejected.

Both countries depend on continuity clauses to ensure ongoing work and undisputed payments, which are explicitly detailed in Florida and Indiana and are standard in Canadian contracts. For financiers, these provisions are as important as forum design, as they help reduce cash-flow volatility during disputes.

Table 34 Canada vs. United States: Key Contrasts and Their Significance

Contrast dimension	United States	Canada	Significance / implication
Early adjudication	No adjudication; relies on DRBs and panels	Interim-binding statutory adjudication early (Ontario, Saskatchewan)	Canada resolves payment and milestone disputes faster, deferring only complex matters to arbitration
Terminal forum & transparency	Mixed: court (VA, FL, IN), administrative (TX), arbitration (PR)	Predominantly confidential, expert-led arbitration	Court-terminal U.S. regimes produce public precedent and sector learning; arbitration regimes favor speed and confidentiality
IC & expert specialization	Maryland Technical/Financial DRBs; Colorado commercial/technical panels; IC-style decision-makers rare	Independent Certifier milestone decisions plus expert/referee pathways (Design, OMR, General)	Specialization separates technical judgments from commercial entitlements, reducing scope creep and improving settlement of mixed disputes
Mid-ladder bindingness	Binding mainly via Texas boards and Puerto Rico arbitration; Indiana conditional	Frequently binding-unless-arbitrated (IC, expert, board); FTRP binding	Canada’s binding mid-tier shortens cycle time; the U.S. relies more heavily on the terminal forum for finality
Administrative appeal	Texas provides a unique record-based appeal via SOAH	No administrative-appeal analogue	Texas uniquely combines prompt resolution with public-law oversight
Continuity clauses	Explicit in Florida and Indiana	Standard across all provincial contracts	Both protect schedule and cash flow; lenders treat continue-work and undisputed-pay clauses as non-negotiable

5.4.3.3 *Comparative Performance Implications*

Cycle time. Canadian adjudication and binding IC/Expert determinations offer a swift interim solution for payment and milestone disputes, postponing only more complex or substantial issues for arbitration. Texas's binding boards, coupled with SOAH review, likewise help shorten cycle times on U.S. projects, whereas advisory models (VA/MD/CO/FL) provide oversight but may extend the process toward final resolution.

Decisional quality. Specialized panels in Canada (IC/Experts/referees) and U.S. states like Maryland and Colorado decrease scope creep and distinguish technical judgments from commercial entitlements, which helps improve settlement rates in mixed disputes.

The focus is on transparency and learning. Court-terminal U.S. models (VA/FL/IN) set a public example, whereas Canadian arbitration and U.S. arbitration/administrative options (PR/TX) balance transparency, speed, and confidentiality. Consequently, sector learning improves when judicial opinions are made public and diminishes where confidentiality prevails.

Finance-ability and operations. In both countries, continue-work and undisputed-pay clauses are the main safeguards against service disruptions and revenue shocks; lenders view them as non-negotiable. Clear venue/seat provisions, along with appointment mechanisms, help minimize threshold disputes and uncertainties during due diligence.

5.4.4 *Cross-Country Recommendations and a Model ADR Method for U.S. and Canadian DBFOM P3 Projects*

Dispute forums should correspond with the dispute type and phase: construction issues are handled via fast-track adjudication or referral to referees; mixed technical and commercial issues are managed by two permanent boards—the Technical Board (covering design, schedule, and quality) and the Commercial Board (addressing entitlement and payment)—with joint sessions for

issues that depend on each other. Legal or policy issues are solely handled by courts. Decisions should be binding with limited review (focusing on errors, authority, and fairness) within a 10–15 day window. Timelines include 10 days for negotiation, 10 days for review, 10–15 days for adjudication, 20–30 days for board decisions, and 30 days for review. Enforcement should include costs for missed deadlines. Contracts should require continuous performance, payment of undisputed amounts, interest, and fees, and specify the venue, authorities, and rules for quick replacement.

Governance must balance rigor and honesty by protecting confidentiality (mediation communications are inadmissible unless for enforcement or cost issues), prioritizing value-based triage (Canada > \$500k, US > \$15M), providing emergency lanes for safety, maintaining a unified evidentiary record, holding partnering sessions and bi-weekly risk huddles, and setting deadlines for procurement protests. Outcomes should be monitored using KPIs like cycle times, resolution rates, schedule impact per disputed dollar, revenue protection, deadline compliance, and participant satisfaction concerning fairness, clarity, and proportionality.

The table below categorizes the cross-country recommendations into six areas, converting the comparative findings into design and governance principles that guide the model framework.

Table 35 Cross-Country Recommendations

Recommendation area	Specific recommendation
Forum alignment by dispute type	Match the forum to the dispute type and phase: construction issues to fast-track adjudication or referee referral; mixed technical-commercial issues to two standing boards — a Technical Board (design, schedule, quality) and a Commercial Board (entitlement, payment) — with joint sessions for interdependent issues; legal or policy issues to courts only.
Bindingness & review	Decisions should be binding with limited review (focused on error, authority, and fairness) delivered within a 10–15 day window.
Timelines	Indicative clocks: ~10 days negotiation; ~10 days review; 10–15 days adjudication; 20–30 days for board decisions; ~30 days for review. Enforcement should attach cost consequences to missed deadlines.
Continuity & forum control	Require continuous performance, payment of undisputed amounts, and interest and fees; specify venue, appointing authorities, and rules for rapid replacement of neutrals.
Governance & confidentiality	Protect confidentiality (mediation communications inadmissible except for enforcement or costs); apply value-based triage (Canada > CAD \$500k; U.S. > USD \$15M); provide emergency lanes for safety; maintain a unified evidentiary record; hold partnering sessions and bi-weekly risk huddles; set deadlines for procurement protests.
Performance monitoring (KPIs)	Track cycle times, resolution rates, schedule impact per disputed dollar, revenue protection, deadline compliance, and participant satisfaction regarding fairness, clarity, and proportionality.

5.4.5 Model ADR Method: TNA-HADR (Trans-North American Hybrid ADR)

TNA-HADR employs Canada's fast-track adjudication methods, IC-Expert techniques, U.S. binding panels, and limited review within a flexible multi-tier system that meets strict deadlines to maintain consistency. It initiates adjudication where legally allowed or through contractual simulation, providing review options like expedited arbitration, tribunals, or courts, depending on the jurisdiction.

5.4.5.1 Principles

The TNA-HADR was guided by principles designed to handle issues at the most basic expert level with clear decisions, deliver binding results through rapid reviews, ensure continuous service and cash flow, and uphold transparency or confidentiality as needed.

5.4.5.2 Tiers and Timing

Tier 0 – Partnering & Risk Huddles. Standing charter; bi-weekly issue surfacing; non-admissible notes.

Tier 1 – Project-Level Negotiation (≤ 10 business days). Issue notice and a concise merits and impact memo; rolling production of contemporaneous records.

Tier 2 – Senior-Executive Conference (≤ 10 business days). Decision-makers discuss; exchange settlement choices 48 hours in advance.

Tier 3 – Rapid Adjudication / Referee / IC (10–15 business days). If statutory adjudication exists (ON/SK), use it for payment or milestone issues; otherwise, use a contractual fast-track referee or IC determination. The decision is interim-binding and payable, subject to later adjustments via board/review.

Tier 4 – Mediation (7–10 business days). Automatic unless both parties opt out; mediator with P3 megaproject experience; non-admissible caucuses.

Tier 5 – Specialized Boards (20–30 business days). Technical Board (design, schedule, quality) and Commercial Board (entitlements, relief, payment). Decisions are binding unless reviewed within 10–15 days. Joint sittings are permitted for related issues.

Tier 6 – One-Shot, Record-Based Review (≤ 30 business days). Option A (U.S. admin-forward): administrative tribunal (e.g., SOAH) with limited grounds. Option B (arbitration-forward): expedited three-arbitrator panel. Option C (court-forward): exclusive venue with review limited to facial error, jurisdiction, or due process.

Terminal Forum. The arbitration award or administrative decision becomes final, and courts are limited to reviewing questions of law or enforcing policy.

The table below shows the Jurisdiction Toggle Matrix (Implementation Guide) for the TNA-HADR

Table 36 Jurisdiction Toggle Matrix (Implementation Guide)

Legal environment	Preferred TNA-HADR toggle
Ontario / Saskatchewan (adjudication statutes)	Enable Tier 3 statutory adjudication for payment/milestones; Tier 5 boards ‘binding unless reviewed’; Tier 6 = expedited arbitration; courts for appointments/enforcement.
Texas-like (admin tribunal available)	No statutory adjudication; emulate fast-track IC/referee at Tier 3; Tier 5 binding boards; Tier 6 = administrative review (record-only).
Court-forward (e.g., Virginia)	Tier 3 IC/expert/referee; Tier 5 advisory boards with mandatory written reasons; Tier 6 = exclusive court with narrow review; preserve confidentiality rules.

Arbitration-Forward (e.g., BC/AB/PR)	Tier 3 IC/referee (fast-track); Tier 5 binding boards or binding FTRP for defined categories; Tier 6 = expedited 3-arbitrator review; courts for urgent relief only.
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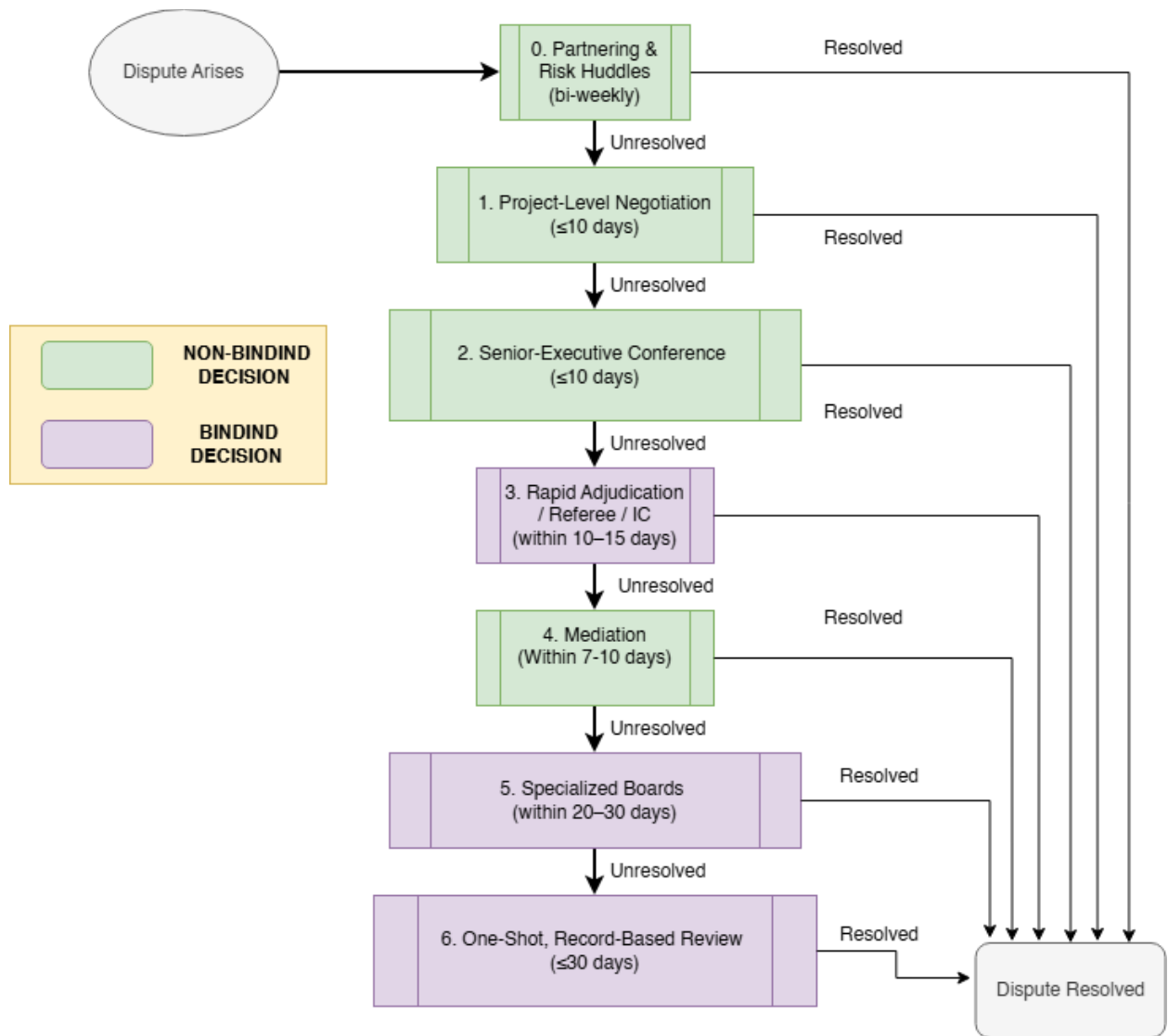


Figure 30 TNA-HARD Flow Chart

5.4.5.3 Expected Performance and Risks

Performance. With strict clocks and default binding features, the median cycle time to Tier 5 closure typically ranges from 30 to 60 days for most disputes, while Tier 3 adjudication or referee

usually resolves a large part of payment and milestone issues within 10 to 15 days. Continuity clauses greatly reduce schedule and revenue volatility and improve financeability.

Risks include over-engineering, which can lead to process fatigue. To prevent this, set clear value thresholds and ensure disciplined chairing. Jurisdictional disputes, such as restrictions on binding ADR against the Crown, should be managed by shifting to advisory outputs and conducting targeted, time-limited policy or agency reviews. Additionally, create a training plan for IC/Board members and maintain a vetted roster.

5.5 Case Study Conclusion

In conclusion, the comparison shows that U.S. ADR models in DBFOM highway P3s are characterized by flexibility and institutional diversity. They include project-level negotiations, tailored dispute boards, and state-specific review processes such as SOAH and orders from the executive director. These features can improve public accountability and accommodate local legal practices. Nevertheless, this fragmentation can lead to inconsistent designs, longer and more complex escalation procedures, and greater reliance on litigation. As a result, predictability decreases and transaction costs rise.

In contrast, Canadian ADR models, especially those managed by provincial agencies like Infrastructure Ontario, are generally more standardized. They feature earlier institutional adoption of multi-tier ADR systems, which include well-defined negotiations, independent expert panels, and streamlined arbitration or court processes. This results in greater procedural clarity, predictable timelines, and a distinct separation between technical dispute resolution and political oversight. However, the Canadian reliance on formal procedures and standardized templates can restrict project-specific innovations and increase costs, making the system less accessible for smaller disputes. Overall, the U.S. model offers greater flexibility in a complex public-law context, whereas

the Canadian approach emphasizes coherence and predictability within a more uniform P3 environment.

Table 37 Summary Comparison of U.S. and Canadian ADR Models in DBFOM P3 Projects

Dimension	United States	Canada
Overall Approach	Flexible, project-specific, and jurisdiction-dependent	Standardized and institutionally structured
Institutional Diversity	High variation across states and projects	Greater consistency across provincial P3 programs
Review Mechanisms	Administrative review (e.g., SOAH), executive decisions, and litigation	Independent experts, adjudicators, and arbitration with limited court involvement
Procedural Clarity	Variable across projects	High due to standardized templates and processes
Timeline Predictability	Less predictable because of diverse procedures and review paths	More predictable through structured escalation and defined timeframes
Technical Expertise	Present but varies by project and jurisdiction	Institutionalized through expert panels, referees, and independent certifiers
Flexibility and Innovation	High flexibility allows adaptation to local legal and project needs	Lower flexibility due to standardized contractual frameworks
Key Strength	Adaptability and accommodation of diverse public-law environments	Procedural consistency, predictability, and efficient dispute management
Key Limitation	Fragmentation may increase complexity, costs, and uncertainty	Standardization may limit project-specific innovation and proportionality
Terminal Forum	Greater reliance on courts and public-law review (generating precedence)	More use of Arbitration restriction information (no precedence)

This study's framework aims to combine the advantages of both systems: a structured, expert-led mid-tier dispute resolution complemented by early dispute-avoidance tools, adaptable to various institutional and jurisdictional settings. The proposed Hybrid, Time-Boxed Specialized Disputes Board (TNA-HADR), includes: (1) initial partnering and risk assessment meetings, (2) quick adjudications or referee rulings, (3) specialized technical and commercial panels that deliver binding

decisions within 20–30 days, (4) limited review options through administrative, arbitral, or judicial channels, and (5) enforceable continuity clauses with fee-shifting for non-compliance.

Table 38 The Model: TNA-HADR (Trans-North American Hybrid ADR)

Tier 0 Partnering & Risk Huddles	Standing charter; bi-weekly issues emerged; notes that are not admissible.
Tier 1 Project-Level Negotiation (≤10 business days)	Issue notice + concise merits and impact memo; rolling production of contemporaneous records.
Tier 2 Senior-Executive Conference (≤10 business days)	Decision-makers discuss; exchange settlement choices 48 hours in advance.
Tier 3 Rapid Adjudication / Referee / IC (10–15 business days)	Use statutory adjudication (ON/SK) for payments or milestones when available; otherwise, rely on a fast-track referee or IC decision. The interim decision is binding and payable, subject to later review or adjustment.
Tier 4 Mediation (7–10 business days)	Automatic unless both parties choose to opt out; mediator with P3 megaproject experience; not admissible caucuses.
Tier 5 Specialized Boards (20–30 business days)	Technical Board (design, schedule, quality) and Commercial Board (entitlements, relief, payment). Decisions are binding unless reviewed within 10–15 days. Joint sittings are permitted for related issues.
Tier 6 One-Shot, Record-Based Review (≤30 business days)	Option A (U.S. admin-forward): tribunal like SOAH with limited grounds. Option B (arbitration-forward): expedited three-arbitrator panel. Option C (court-forward): exclusive venue with review limited to facial error, jurisdiction, or due process.

Practically, parties ought to (1) match dispute forums with dispute types and project stages, (2) pre-select panels and uphold strict decision deadlines, (3) maintain operational security via continuous work and payment provisions, and (4) mandate decisions to be concise, well-reasoned, and dependable for lenders. These actions are crucial for turning the framework from contractual terms into effective daily project management.

CHAPTER 6 EXPERT INTERVIEWS

This section of the study employed a qualitative approach, using semi-structured expert interviews to refine a proposed multi-tier dispute resolution (ADR) framework for public-private partnership (P3) contracts (Creswell & Poth, 2017). The initial framework was created earlier through the comparative analysis of design-build-finance-operate-maintain (DBFOM) highway P3 agreements discussed in the previous chapter (Muiruri & Aziz, 2026). Since that framework was based on documentary analysis, expert interviews were conducted to evaluate its practical clarity, order, appropriateness, and feasibility in real project environments.

The expert interview design is justified by the specialized and limited distribution of P3 ADR expertise. Practitioners with direct, practical experience in dispute resolution for long-term concessions form a small, well-connected community. Semi-structured interviews, which combine a consistent set of questions with flexibility for participant-specific elaborations, are the standard method for gathering expert knowledge in construction management research (Spearing et al., 2022). The interview protocol was developed through three stages: first, key constructs from the case study findings were mapped onto a topical framework; second, individual questions were drafted for each area; and third, the protocol was piloted with the dissertation supervisor and one practitioner outside the final sample. Their feedback on methodological rigor and practical clarity informed revisions before data collection.

Table 39 Interview Protocol Structure

Section	Topic	Core Questions / Prompts	Duration
Section 1	Background & Consent	Professional role, years of experience, jurisdictions worked in, dispute resolution involvement; recording consent and anonymization confirmation	5–10 min
Section 2	Problem Statement Validation	Likert-scale questions (1–5) on dispute frequency, phase of occurrence, dispute topics, root causes, and disruption to project performance	5–8 min
Section 3	ADR Structures & Effectiveness	General ADR structures encountered; importance of contractual ADR mechanisms; success/failure examples; position on multi-tiered vs. single-step processes	10–15 min

Section 4	Case Study Review	Reaction to presented U.S. and Canadian ADR process exemplars; degree of alignment with participant's own experience	8–10 min
Section 5	Framework Validation	Assessment of proposed multi-tiered ADR framework; recommendations on tier sequencing, timeframes, DRB design, mediation placement, and arbitration vs. litigation	10–15 min
Section 6	Closing & Referrals	Under-researched areas; suggestions for framework refinement; snowball referrals to additional practitioners	3–5 min

Participants were recruited using a mix of purposive and snowball sampling (Naderifar et al., 2017). Initially, purposive sampling selected participants who met specific inclusion criteria. Subsequently, snowball sampling expanded the group by asking each participant to refer qualified colleagues. This approach is a widely accepted and validated method for reaching expert populations that are not readily accessible to the public (Biernacki & Waldorf, 1981).

To participate in the study, individuals had to meet all three criteria:

- i. Be actively involved in construction dispute resolution within the U.S. or Canada, with direct experience in at least one of the following: project-level negotiation, Dispute Review Board, mediation, arbitration, or litigation.
- ii. Have worked on at least one project that can be broadly classified as a long-term infrastructure concession, such as DBFOM P3, design-build with extended operations and maintenance obligations, or a similar long-duration public infrastructure contract.
- iii. Be willing to take part in a recorded, semi-structured interview and consent to the anonymized use of quotations in academic publications.

Participants were not required to have worked exclusively on DBFOM P3 projects, given the scarcity of fully operational DBFOM concessions in the U.S. and the relevance of analogous dispute contexts, including design-build with long-tail liability and FIDIC-governed international contracts.

Sixteen participants were recruited between February and May 2026 across seven states (Washington, Virginia, Florida, Colorado, California, Massachusetts, and Texas) and had experience

in Canadian provinces and international settings. All interviews were conducted via video conferencing (Microsoft Teams, Zoom) and lasted 32 to 94 minutes, with a mean of approximately 63 minutes. Recordings were transcribed using AI software, producing full, verbatim transcripts. The PI reviewed and corrected all transcripts against the recordings, verifying technical terms, proper nouns, and speaker attributions. Transcripts were anonymized by replacing participant names with identifiers (P01–P16) and generalizing references to projects, clients, or colleagues to ensure confidentiality while maintaining analytical utility.

The sixteen participants selected align with recommended sample sizes for qualitative expert interviews, as outlined by Guest et al. (2006) and Hennink and Kaiser (2022). During data collection, thematic saturation, where additional interviews no longer yield new codes or themes, was assessed iteratively. Analysis of the final four interviews (P13–P16) revealed no new core themes, though they added detail and examples to existing themes, indicating that theoretical saturation was approaching.

Thematic analysis was chosen as the primary analytical method. It is a fundamental qualitative technique that systematically identifies, organizes, and interprets patterns of meaning (themes) across a dataset (Braun & Clarke, 2006). Coding was conducted in ATLAS.ti, valued for its capacity to support organized qualitative data management, ensure consistent coding across transcripts, and improve transparency and rigor in the thematic analysis (Frieze, 2012; Simula, 2018). To bolster credibility without a second coder, several measures were taken: interpretations were cross-verified through negative case analysis; efforts were made to identify participant accounts that challenged dominant patterns; a reflexive journal was maintained to document evolving analytical decisions; and emerging themes were reviewed with the dissertation advisor. The analysis adopted a hybrid inductive-deductive approach. An initial deductive coding framework was developed from five sensitizing categories based on the case study findings: (1) dispute frequency and landscape, (2)

ADR structure and sequencing, (3) DRB design and effectiveness, (4) mediation and negotiation practices, and (5) jurisdictional differences. These categories provided an initial organizational structure but were not rigid; inductive open coding uncovered five additional themes not included in the initial framework. This hybrid method aligns with the “template analysis” approach to thematic analysis, described by King (2012), and is appropriate where a substantial prior literature exists alongside a need to remain open to unexpected practitioner insights (Creswell & Poth, 2017).

6.1 Interview Findings

6.1.1 Participant Profiles

Table 26 outlines the professional backgrounds of the sixteen participants. The group includes construction attorneys (both outside counsel and in-house), dispute board members, mediators, arbitrators, owner’s advisors, technical expert witnesses, and project delivery specialists. Together, they have experience in infrastructure P3 projects across at least fifteen U.S. states and several Canadian provinces, with additional international experience in Panama and the Middle East. Total P3-related experience among all participants exceeds 400 years.

Table 40 Interview Participant Profiles

Code	Title	Primary ADR Role	Jurisdiction	P3 Exp.	Profile Summary
P01	Attorney & DRB Member	Outside Counsel / DRB Neutral	U.S. State	5-10 yrs	Construction attorney, former Kiewit engineer; DRB member (Florida)
P02	Arbitrator/Mediator/DRB Member	DRB Neutral / Arbitrator	U.S. State	5-10 yrs	Retired construction litigator; JAMS panelist; prior Middle East P3 experience
P03	Attorney & Mediator	Outside Counsel / Mediator	U.S. Federal + State	5-10 yrs	Outside counsel; WMATA P3 projects; arbitration advocate
P04	Construction Attorney	Outside Counsel	U.S. State + Federal	20+ yrs	Partner, Seattle firm; represents WSDOT, Port of Seattle, tech clients
P05	Attorney & DRB Member	DRB Neutral / Arbitrator	U.S. Federal + State	11-20 yrs	Construction attorney; active DRBs in Virginia Beach; 9 active arbitrations
P06	DRB Member & Arbitrator	DRB Neutral / Project Co.	U.S. State	20+ yrs	Former construction company president; 30+ DRBs; DOT spec author

P07	P3 Contract Specialist	Outside Counsel	U.S. State	20+ yrs	P3 contracting expert; highways, airports, transit
P08	Civil Engineer & DRB Member	DRB Neutral / Owner Advisor	U.S. State + Canada	20+ yrs	Major Project director; ~21 DRBs; MBTA transit advisor; solo practice
P09	Construction Attorney	Outside Counsel	U.S. State	40+ yrs	Washington State specialist; WSDOT; King County; litigation
P10	Dispute Prevention Specialist	Owner Advisor / DRB Neutral	U.S. + Canada	30+ yrs	DRBF(Senior member); \$900M+ resolved w/o litigation
P11	Technical Consultant	Expert Witness / Consultant	U.S. State	31 yrs	Underground/trenchless specialist; DRB testifier; claims resolution focus
P12	In-House Counsel	Public Sector Owner	U.S. State	20 yrs	Asst. General Counsel, Florida; litigation-final process
P13	Owner's Advisor & Neutral	Owner Advisor / DRB / Arbitrator	U.S. State + Panama	20+ yrs	Civil engineer/lawyer; owner's advisor on P3s;
P14	Mediator & Arbitrator	DRB Neutral / Mediator	U.S. State	11-20 yrs	JAMS-affiliated; \$570M arbitration; 30+ DRBs (Florida DOT focus)
P15	P3 Transactional Attorney	Owner Advisor / Outside Counsel	U.S. State	20+ yrs	Virginia DOT, Maryland DOT, NCDOT, Georgia SRTA, Florida DOT, TxDOT
P16	Owner advisor/ Schedule & Delay Expert	Technical Expert Witness/ Owner advisor	U.S. + global	20+ yrs	Long International; schedule/delay expert; US and Canadian arbitration experience

The sample covers a wide range of participants, representing the entire stakeholder spectrum of a typical P3 concession. This includes public sector owners (P08, P12), private concessionaires (P06), transaction advisors (P07, P15), dispute resolution neutrals (P01–P06, P08, P10, P13, P14), outside counsel (P02, P03, P04, P05, P09, P15), and technical expert witnesses (P11, P16). The diversity is deliberate, reflecting how ADR effectiveness in P3 projects relies on strong relationships and aligned incentives among all involved parties.

Table 41 Interview Participants Sample Composition by Primary Professional Role

Primary Professional Role	n	%
Dispute Resolution Neutral (DRB Member / Arbitrator / Mediator)	6	37.5%
Outside Counsel (construction law)	5	31.3%
Dual Role: Counsel + Neutral	2	12.5%
Owner's Advisor / Transaction Counsel	2	12.5%
In-House Counsel (Public Sector)	1	6.3%
Total	16	100%

Table 42 Interview Participant Sample Composition by Years of P3-Related Experience

Experience Range	n	%
5–10 years	2	12.5%
11–20 years	3	18.8%
20+ years	11	68.8%

Table 43 Interview Participants Sample Composition by Primary Jurisdiction

Primary Jurisdiction	n	%
U.S. state-level only	8	50.0%
U.S. state + federal	5	31.3%
U.S. + Canada	3	18.8%

6.1.2 Coding Framework

The thematic coding process employed a hybrid approach, combining inductive and deductive methods. It started with a deductive framework based on five sensitizing categories from the prior case study: (1) dispute frequency and landscape, (2) ADR structure and sequencing, (3) DRB design and effectiveness, (4) mediation and negotiation practices, and (5) jurisdictional variation. Then, inductive open coding of the transcripts identified five additional themes: (6) preference for final resolution (arbitration versus litigation), (7) timing and process design, (8) dispute prevention as a separate issue from dispute resolution, (9) the central role of senior executives, and (10) gaps in structural and contractual frameworks.

The complete coding matrix, which includes thirty individual codes across ten themes, is shown in Table 30. Codes are linked to participant identifiers based on meaningful engagement with the corresponding construct during the interview. A code was assigned to a participant if they either directly discussed the concept, provided a case example, or clearly expressed their stance on the related question.

Table 44 Thematic Coding Matrix

Parent Code	Code	Definition	Participants
Theme 1: Dispute Landscape	T1-A: Dispute Frequency	Perceived rate of material disputes arising in long-term concessions	All 16

Theme 1: Dispute Landscape	T1-B: Phase of Occurrence	Project phase (design/construction/operation) when disputes most often arise	All 16
Theme 1: Dispute Landscape	T1-C: Dispute Topics	Categories of disputes: geotechnical, scope, utility, schedule, finance, force majeure	All 16
Theme 1: Dispute Landscape	T1-D: Root Causes	Underlying causes: differing site conditions, scope ambiguity, owner interference, communication breakdown	All 16
Theme 2: ADR Structure	T2-A: Tiered Process Endorsement	Support for multi-tiered ADR over single-step resolution	All 16
Theme 2: ADR Structure	T2-B: Observed Tier Structures	Actual sequence of ADR steps encountered in practice	P01-P16
Theme 2: ADR Structure	T2-C: Long-term Relationship Driver	P3 relational continuity as reason for tiered preference	P02,P03,P05,P08,P12,P13,P15
Theme 3: DRB Design & Effectiveness	T3-A: DRB as Prevention	DRB as proactive dispute prevention mechanism vs. reactive resolution tool	P01,P05,P06,P08,P10,P13,P14
Theme 3: DRB Design & Effectiveness	T3-B: Binding vs. Non-Binding	Debate over DRB recommendation enforceability	P01,P04,P05,P06,P08,P09,P14,P16
Theme 3: DRB Design & Effectiveness	T3-C: Admissibility Debate	Whether DRB findings should be admissible in arbitration/litigation	P04,P05,P06,P09,P11
Theme 3: DRB Design & Effectiveness	T3-D: DRB Composition	Selection of qualified, neutral, and technically capable members	P05,P06,P08,P12,P13,P14
Theme 3: DRB Design & Effectiveness	T3-E: Specialized/Dual Boards	Technical vs. commercial/financial DRB distinction	P01,P05,P07,P12,P16
Theme 4: Senior Executive Tier	T4-A: Executive Escalation Value	Senior leadership involvement as critical to de-escalation	P02,P03,P04,P05,P07,P08,P10,P12,P13,P15
Theme 4: Senior Executive Tier	T4-B: Field-Level Limitation	Ground-level personnel too entrenched; executive distance creates space for resolution	P04,P08,P13
Theme 5: Mediation Practice	T5-A: Mediation Ubiquity	Near-universal use of mediation before arbitration/litigation	All 16
Theme 5: Mediation Practice	T5-B: Mandatory vs. Optional	Debate over whether mediation should be contractually required or elective	P05,P07,P11,P12,P14,P15
Theme 5: Mediation Practice	T5-C: Mediator Expertise	Technical construction knowledge as prerequisite for effective mediation	P06,P11,P14
Theme 5: Mediation Practice	T5-D: Pre-Claim Mediation	Conducting mediations before formal claims are filed as preventive strategy	P10
Theme 6: Final Resolution	T6-A: Arbitration Preference	Preference for arbitration over litigation; reasons: expertise, speed, control	P01,P02,P03,P04,P05,P07,P08,P13,P16
Theme 6: Final Resolution	T6-B: Public Sector Litigation Mandate	Legal/statutory requirements forcing public entities to litigate	P04,P05,P12,P15
Theme 6: Final Resolution	T6-C: Non-Binding	Critique of non-binding arbitration as redundant and wasteful step	P11,P16

	Arbitration Critique		
Theme 7: Jurisdictional Variation	T7-A: US Fragmentation	State-by-state variation causing inconsistency in US P3 ADR	P04,P05,P07,P15,P16
Theme 7: Jurisdictional Variation	T7-B: Canadian Standardization	More prescriptive and coherent Canadian provincial P3 ADR frameworks	P02,P09,P16
Theme 7: Jurisdictional Variation	T7-C: Independent Certifiers	Canadian/international use of independent certifiers for milestone determinations	P09,P16
Theme 8: Time & Process Design	T8-A: Speed Imperative	Construction phase requires rapid dispute resolution to maintain project momentum	P01,P04,P07,P08,P13, P15
Theme 8: Time & Process Design	T8-B: Timeframe Practicality	Tension between tight academic-proposed timeframes and real-world process needs	P02,P07,P11
Theme 9: Dispute Prevention	T9-A: Relational Capital	DRB and partnering arrangements build relational capital that discourages escalation	P01,P06,P08,P10
Theme 9: Dispute Prevention	T9-B: Proactive Monitoring	Regular DRB site visits and meetings as early-warning systems	P01,P05,P06,P08,P14
Theme 10: Framework Gaps	T10-A: Flow-Down Gaps	ADR provisions in head contracts not always reflected in subcontracts	P03,P07,P14
Theme 10: Framework Gaps	T10-B: Operations Phase Neglect	ADR provisions skewed toward construction; operations disputes under-addressed	P06,P10,P12
Theme 10: Framework Gaps	T10-C: Scope Clarity at Formation	Lack of clear scope definition as persistent upstream cause of downstream disputes	P04,P06,P09,P11

6.1.3 Quantitative Response Summary

Several interview questions invited participants to rate concepts on a scale of 1 (strongly disagree / never) to 5 (strongly agree / always). While the sample size precludes statistical inference, the distribution of responses provides useful contextual anchoring for the qualitative themes that follow. Table 31 summarizes mean scores, modal responses, and key observations for the seven quantitative items.

Table 45 Summary of Likert-Scale Responses (n = 14–16 per item)

Question	Mean Score (/5)	Modal Response	Range	Notable Observations
Frequency of material disputes	3.9	4-5	1-5	Selection bias noted: practitioners only see projects with disputes; P03/P12/P13 report lower frequency at owner-concessionaire level

Disruptiveness of disputes to project performance	4.3	4-5	3-5	Near-universal agreement that disputes are highly disruptive; relationship impacts rated variable; cost/time most affected
Importance of contractual ADR mechanisms	4.8	5	4-5	Strongest consensus item; all participants affirmed critical importance regardless of primary role
Suitability of multi-tiered ADR over single-step	4.7	5	4-5	Strong agreement; P02 noted exceptions for very large disputes where parties already know they are heading to arbitration
Importance of early/senior executive tiers	4.9	5	4-5	Highest consensus; P16 stated he would give a 6 if possible; framed as the single most important preventive measure
Effectiveness of Dispute Review Boards	4.1	4-5	3-5	P05 offered a moderate 3, citing variable party commitment; DRB functioning as prevention rated higher than as adjudication
Suitability of arbitration as final step	4.4	5	3-5	High for private sector; moderated by public sector participants legally constrained to litigation (P04, P05, P12)

The most robust consensus item is the importance of contractual ADR mechanisms (mean 4.8), with fifteen of sixteen participants rating this a 4 or 5. The suitability of multi-tiered ADR over single-step resolution (mean 4.7) and the importance of early tiers and senior executive involvement (mean 4.9) also achieved near-unanimous high ratings. These results confirm the central thesis of this research and establish the expert-legitimacy basis for the proposed ADR framework.

Notable divergences include dispute frequency (range 1–5), which reflects a methodological artifact of selection bias: practitioners engaged in dispute resolution naturally encounter a disproportionate share of projects with disputes. Participants who also serve as transaction advisors or project delivery consultants (P07, P13, P15) reported lower perceived frequencies, consistent with a broader project exposure not filtered by dispute occurrence.

6.2 Thematic Analysis

6.2.1 Theme 1: The Dispute Landscape in Long-Term Concessions

6.2.1.1 *Dispute Frequency and Selection Bias*

Participants were nearly uniform in observing that material disputes are common in complex, long-duration infrastructure contracts, though many immediately qualified this observation with an acknowledgment of their own selection bias. As P05 explained, the epistemological limit of practitioners who are only retained when disputes exist shapes their perception of frequency:

“I would say probably four or five. And I’m hesitant because the only ones I see are in dispute. So it’s hard for me to know how many of them are out there that I never hear of.” —P05

This self-aware qualification was echoed across multiple participants (P02, P14), and should be understood as an important methodological note when interpreting practitioner-reported frequency. Participants who also engage in the transactional phases of project development—owner’s advisors and transaction counsel—reported markedly lower perceived frequencies at the owner-concessionaire interface specifically (P03, P13, P12), while acknowledging that disputes within the concessionaire’s design-build chain are considerably more common.

P14 offered particularly illuminating insight from a career spanning over thirty dispute review boards:

“My first DRB chair told me that he had done 110 DRBs. He said they fall into two categories: there are the ones that have either zero or maybe one dispute, and the other ones have lots—eight, ten, or fifteen. It’s not like two, three, or four.” —P14

This bimodal pattern—projects that escalate quickly to high dispute volume versus those that navigate the construction phase without formal hearings—is a finding of substantive importance. It suggests that dispute frequency in P3s may be less a function of project complexity

per se and more a function of relational quality, ADR maturity, and early-warning mechanisms employed at the outset.

6.2.1.2 *Phase of Occurrence: Construction Dominance*

Across all sixteen interviews, the construction phase was identified as the period when material disputes most commonly crystallize, regardless of whether their underlying causes originated in design. As P05 explained:

“I would say during construction—and construction can revert back to design issues, but they generally don’t get to the dispute level until they’re in the construction phase.” —P05

This convergence is consistent with the broader construction dispute literature and reflects the operational reality that construction phase is where financial exposure concentrates, where differing conditions are encountered, and where the interdependency between parties becomes most acute. P11, who specializes in underground construction, noted an intensification in recent years:

“Disputes arise on almost all of our projects, and it’s heavier now than it has ever, ever been. If you would have asked me ten years ago, I would have said about 50% of the projects, but we’re finding today... I would give it a four or a five.” —P11

P06 provided the only consistent report of disputes spanning all three phases (design, construction, operation), attributing this to direct experience on a P3 involving revenue-share arrangements where the operation phase generated a distinct class of financial disputes related to coal revenues. This is a noteworthy exception that points to the underexplored terrain of operational-phase ADR in DBFOM structures.

6.2.1.3 *Root Causes of Disputes*

The most frequently cited root cause across the sample was differing site conditions, particularly in geotechnical and underground contexts. P11 provided the most detailed treatment of

this issue, noting that even under risk-transfer regimes, ground conditions are frequently retained by the owner:

“By far the most common is differing site conditions. Even though they are alternative contracting mechanisms, the owner owns the ground, or risk-shares with the contractor on the geotechnical conditions.” —P11

P05 highlighted two systemic causes specific to infrastructure P3s: utility conflicts and failure by the owner to deliver real estate in time for construction commencement. These are particularly significant because—unlike most P3 risks—they are typically retained by the owner even under full risk-transfer models, creating an inherent source of friction at the owner-concessionaire interface:

“Generally the owner maintains responsibility for utility conflicts and also for getting real estate and getting the land to be able to build the project. So those two areas generally fall back on the owner.” —P05

P04 and P09 pointed to communication breakdown and relationship deterioration as a universal root cause cutting across dispute types, with P04 offering the most succinct characterization:

“When there is a breakdown in relationships and communications—even in pain/gain-sharing contracts like IPD, you still have issues where one party finds themselves entrenched in their position and unable to absorb that risk.” —P04

P01 identified a structural tension specific to design-build P3s: the disconnect between the party responsible for design delegation (the concessionaire) and residual design control expectations held by the public owner. This scope control ambiguity—effectively a governance issue at the design-build interface—was reinforced by P07 as a primary driver of disputes in DBFOM structures where the design-build component is embedded within a longer concession wrapper.

P15, drawing on experience contracting disputes between design-builders and their engineering subconsultants, introduced what may be the most underappreciated locus of P3 disputes:

“In 95% of the cases that I’ve ever seen, you have a builder who goes and hires a very large engineering firm... These P3 projects typically are in the billions, and there are very few construction companies that have in-house engineering capability.” —P15 [P14 in original]

This insight—that disputes frequently originate within the concessionaire entity, between the design-builder and its engineer, rather than at the owner-concessionaire interface—has significant implications for ADR framework design. Most existing P3 ADR clauses address the owner-concessionaire relationship; relatively few cascade meaningful protections down to the design-build subcontract level.

6.2.2 Theme 2: Universal Endorsement of Multi-Tiered ADR

Perhaps the strongest finding across the entire interview set is the near-unanimous endorsement of multi-tiered, escalating ADR processes over single-step resolution mechanisms. Fifteen of sixteen participants rated this proposition 4 or 5 on the five-point scale, with most selecting 5 (strongly agree). The sole partial dissent (P02, rating 4) reflected not disagreement with the principle but an acknowledgment that, in very large disputes involving hundreds of millions of dollars and deeply entrenched positions, the intermediate tiers may become procedural formalities rather than genuine resolution opportunities.

“For the great majority of disputes, a multi-tier ADR process is very helpful and resolves the run of the mill kinds of things fairly efficiently. But when it gets to be a life-or-death kind of thing, where you’ve got a billion-dollar claim... the preliminary steps before arbitration are really just both sides having to go through them.” —P02

The most commonly cited driver of this preference is the long-term relational nature of P3 concessions. Participants consistently framed the multi-tiered process as an instrument for relationship preservation, not merely dispute resolution. P12, who serves as in-house counsel for a major airport authority, captured this rationale most directly:

“Your P3s are long-term partnerships. You can’t get yourself geared up to fight. You have to work towards a solution... you’re going to have to work with each other probably long after all the personalities that caused the dispute are long gone.” —P12

P13 extended this reasoning to the incentive structure embedded in long-duration contracts: because the parties will remain interdependent for the full concession term, they have a material financial interest in preserving the working relationship that no court or arbitral tribunal can provide as effectively as a well-designed ADR ladder.

The observed structural template for multi-tiered ADR among experienced practitioners follows a consistent pattern, which can be summarized as follows:

- Step 1: Project-level negotiation (field/project manager tier) with defined notice and response periods (typically 7–14 days)
- Step 2: Senior executive escalation, with executive-level representatives not directly involved in day-to-day project operations (typically 10–21 days)
- Step 3: Dispute Review Board (DRB) hearing and recommendation (for projects using DRBs; typically 30–60 days post-referral)
- Step 4: Mediation (typically 30–60 days; often optional or mutually agreed rather than mandatory)
- Step 5: Final binding resolution (arbitration preferred by most; litigation required for some public entities)

Specific timeframe data was elicited from P07, who referenced a current contract he had drafted: ten days for project-level resolution, seven days for a steering committee, sixty days for mediation triggered by the first face-to-face session. P02 noted that on one major Washington Metro extension project, the tiered process had generated fifteen DRB decisions before the parties reached a mediated settlement on all outstanding issues in a single day, starting from a \$300 million gap.

6.2.3 Theme 3: Dispute Review Boards — Effectiveness, Design, and Limits

6.2.3.1 DRBs as Dispute Prevention, Not Merely Resolution

One of the most theoretically significant findings of the interview analysis is the reframing of DRBs by practitioners as instruments of dispute prevention rather than purely adjudicative tools. This framing was introduced most vividly by P01, who described the behavioral dynamics created by regular DRB oversight from the contractor's perspective:

“I got to say, the week leading up to the monthly meetings and the week leading up to it, a lot more movement happened between us and the owner directly... We can't leave the list be longer than last time. Which one of these can we resolve? There was a lot of positive pressure to sort of do what you're supposed to do.”—P01

This account of anticipatory bilateral resolution—driven not by formal hearings but by the accountability created by regular DRB oversight—was corroborated by P06, P08, P10, and P14. P10 (the president of the Dispute Resolution Board Foundation) went further, arguing that the most successful dispute resolution programs are those that operate entirely in this pre-claim, preventive mode:

“The goal is not to have any litigation, and the project is very close to getting towards final completion. But that's typical for me. I will have a project that's multi-year... and we will be doing mediations on that project with no claim filed. But we're doing it in a preventive way.”—P10

This prevention orientation has important design implications: the value of a DRB is maximized not through the quality of its formal recommendations but through the behavioral discipline it imposes on party communications throughout the project lifecycle. A DRB that is convened only when disputes have already hardened into formal claims will necessarily operate at reduced effectiveness.

This reframing has an institutional lineage: although DRBs appeared in U.S. practice in the mid-1970s as quasi-adjudicative panels (Menassa and Peña Mora, 2010), the recognition of their avoidance function was gradual. This recognition was formally institutionalized through the founding of the DRBF in 1996, the ICC Dispute Board Rules in 2015, and FIDIC's 2017 redesignation of its board as the Dispute Avoidance/Adjudication Board. However, the North American P3 contracts studied in Phase 2 still specify DRBs as reactive escalation steps, and there is limited empirical evidence on how standing oversight actually prevents disputes in the P3 context. The contribution of this study is providing empirical grounding and translating that into improved drafting practices.

6.2.3.2 The Binding vs. Non-Binding Debate

The enforceability of DRB recommendations was the most actively contested design question in the interview set, generating substantive disagreement among practitioners. The dominant practice in U.S. projects is for DRB recommendations to be non-binding, and this was affirmed by the majority of participants (P04, P05, P06, P08, P09, P14). However, the normative desirability of this arrangement was contested.

P06, drawing on his experience developing the Colorado DOT specification, offered what he considers the optimal hybrid: recommendations below a defined threshold (in his example, \$50,000) are binding, while larger claims remain non-binding. This tiered enforceability design attempts to capture the efficiency advantages of binding decisions for routine disputes while preserving appellate rights for high-stakes claims.

P05 presented the most nuanced empirical account of how DRB recommendations function in practice on the Virginia Beach light rail project:

“I was on a project where a DRB was set up. We had 17 hearings, issued 17 recommendations, and that mechanism resulted in settlement and settlement of all claims on that project without the need for further litigation.” —P05

This account illustrates the mechanism by which non-binding recommendations can still drive resolution: by establishing a persuasive expert view of the merits, DRB recommendations alter the parties’ best-alternative-to-negotiated-agreement (BATNA), making settlement more attractive than continuation to arbitration.

6.2.3.3 The Admissibility Debate

The question of whether DRB recommendations should be admissible in subsequent arbitration or litigation proceedings is the issue on which practitioners are most divided. This debate reflects a genuine tension between two legitimate interests: the use of DRB findings as a reputational and evidentiary anchor (favoring admissibility) and the concern that admissibility creates strategic behavior in DRB proceedings that undermines the candor necessary for genuine resolution (disfavoring admissibility).

P04 articulated the concern about strategic behavior:

“The issue of admissibility of those findings in court can affect how effective the DRB will be—when the findings of the DRB are admissible, it might make people not negotiate in good faith or there might not be as much submissions.” —P04

This concern was echoed by P09, who described a case where a DRB process on a wastewater treatment plant produced a detailed multi-issue recommendation that neither party accepted, with the result being “a giant waste of time except for the fact that you got more information about what the other side’s position was.” P09 characterized this as a discovery

mechanism rather than a resolution mechanism—an outcome enabled precisely by admissibility concerns that discouraged good-faith engagement.

Conversely, P05 and P06 argued strongly for admissibility, with P05 noting that in his arbitration experience, DRB recommendations are helpful to arbitrators precisely because they reflect the considered view of highly qualified experts who were present throughout the project:

“I think those recommendations ought to be admissible in the next procedure... You generally have three very highly qualified experts to sit on DRBs, and their opinions and their view of the dispute should not be taken lightly.” —P05

P06 introduced a practitioner innovation from Colorado that partially resolves this tension: allowing attorneys to attend DRB hearings as observers (to gain understanding of the dispute) but prohibiting their active participation in the proceedings. In his account, the assistant attorney general for the Colorado DOT attended hearings in this capacity and used the proceedings to develop a more realistic assessment of the department’s legal position—ultimately facilitating settlement even in cases where the DRB’s recommendation was rejected.

6.2.3.4 Specialized and Dual-Board Structures

A finding from the prior case study that was explicitly tested with practitioners was the existence of specialized DRB structures—specifically, the division of board jurisdiction between technical and commercial/financial dispute categories. This practice was identified in Florida DOT contracts and in certain Canadian provincial frameworks.

Multiple participants confirmed awareness of and support for this model. P07 (P3 contract drafter) noted:

“In the mega P3 projects, I think it can be very helpful because you are dealing with different issues at very sophisticated levels. Having boards with multiple members who bring different perspectives—whether it be construction executive experience on the engineering side and finance

executive or legal financing experience on the financing side—that experience can be very helpful.”

—P07

P01, who serves on boards at Tampa Airport (a Florida DOT-adjacent procurement environment), confirmed practical exposure to this structure. P12 (Tampa Airport in-house counsel) framed the distinct dispute types in DBFOM as naturally amenable to separate expert tracks: construction defects and scope disputes require different expertise than revenue-share calculations, tolling mechanisms, or financing covenant disputes. The consensus view is that specialized boards are appropriate for projects above a certain complexity threshold, particularly where the operations and maintenance phase generates financially distinct dispute types.

6.2.4 Theme 4: Senior Executive Involvement as a Critical ADR Tier

The importance of senior executive involvement as an escalation tier before formal adjudication was the single item on which participant consensus was most robust (mean 4.9; P16 stated he would rate it a 6 if the scale allowed). The rationale offered by participants falls into three distinct but complementary arguments.

First, executives carry decision-making authority that field-level personnel lack, enabling resolution of disputes that have stalled because ground-level staff are not empowered to authorize compromises. P03 articulated this point directly:

“The executive meetings have to take place once a quarter and they have to resolve the issues... I like to say that it can’t just be the line people showing up at a discussion session. It has to be people removed from the line, someone one or two steps removed who don’t have a personal dog in the fight.” —P03

Second, executives have visibility across the full commercial relationship, including future business and reputational interests that are not visible to project-level staff. This broader

commercial calculus can reveal resolution pathways that field personnel are structurally unable to access. P08 described how this dynamic functioned on the Big Dig, where his role as the “last decision-maker before the DRB” allowed him to bring a project-level perspective that neither contractors nor junior owner staff could bring.

Third, executive escalation depersonalizes disputes that have become entangled with interpersonal conflict at the field level. P04 identified this as the most common failure mode of field-level negotiations:

“You may have some animosity at the lower tier project field level that may not be resonating up to... the senior management who can take a more global look and bring in other business commercial issues that might make it easier to resolve.” —P04

P16, a schedule and delay expert, placed this tier at the center of his philosophy of dispute management, describing it as the difference between resolving disputes on the project timeline versus diverting project staff into litigation preparation:

“If you can resolve it early with negotiations and executive meetings, that’s best of all worlds right there. When you’re on a project team, your focus should be building the project. If you get stuck in the middle of a litigation, you’re not working on the project—you’re preparing for testimony.” —P16

6.2.5 Theme 5: Mediation — Role, Effectiveness, and Placement

Mediation was acknowledged as an almost universally present step in the ADR ladder by all participants, though its placement, mandatory character, and effectiveness were the subject of meaningful divergence. Three sub-positions are identifiable in the interview data.

The largest group of participants (P01, P03, P07, P08, P12, P13, P14) treat mediation as a near-obligatory step between any form of adjudication and final binding resolution, citing the cost and delay savings of a negotiated settlement relative to arbitration or litigation. P05 was particularly emphatic, noting that in his experience across a portfolio of P3-scale projects, mediation is used

“almost always” before formal proceedings, and that courts in litigation contexts will invariably order it regardless:

“We always, always use mediation... If we are in litigation, a court is always going to order it. So a lot of disputes get mediated multiple times.” —P12

A smaller group (P06, P11) expressed more qualified views of mediation, with P06 noting that court-ordered mediation often becomes a procedural formality when parties lack genuine intent to settle, and P11 raising the concern that mediators without deep technical construction knowledge are easily misled by technical presentations:

“If the mediator isn’t really versed in the issue—in other words, maybe he’s an attorney and he doesn’t understand pile driving, let’s say—it’s too easy to pull the wool over the mediator’s eyes.” —P06

On the question of mandatory versus optional mediation, the weight of practitioner opinion favors optional (i.e., mutually agreed) mediation, particularly in later tiers. P07, drawing on his active drafting practice, confirmed that most contemporary P3 contracts require mutual consent to trigger mediation: “either party can request it, but it has to be accepted by the other.” The consensus view is that mandatory mediation generates “going through the motions” behavior that consumes time and resources without proportionate benefit.

The most innovative practitioner approach to mediation was described by P10, who has developed a model of pre-claim, preventive mediation conducted before any formal dispute notice is filed:

“We do probably 20 to 30 mediations a year as a group... We will be doing mediations on that project with no claim filed. But we’re doing it in a preventive way—to either document for a regulatory body how we got to that decision, but really just to get everybody in a rhythm that we’re going to, on any issue, kick the tires and try to find what’s the right compromise.” —P10

This pre-claim mediation model, which P10 credits with resolving over \$900 million in construction value without litigation, represents a significant departure from the conventional view of mediation as a downstream ADR step and suggests that the greatest value of mediation lies not in formal proceedings but in the collaborative habit it creates.

6.2.6 Theme 6: Arbitration vs. Litigation as Final Resolution Mechanism

The preference for arbitration over litigation as the final binding resolution mechanism was strongly expressed by the private-sector-oriented participants and by practitioners who serve as neutrals. The key advantages cited were consistent across the sample: the expertise of construction-specialist arbitrators, procedural control and confidentiality, and substantially reduced time to resolution relative to court proceedings.

P05 was the most enthusiastic advocate:

“Very experienced arbitrators who have worked for many years in the area understand construction, and I just think you get a much more rational approach and a rational result from an arbitrator than you would from a court, especially if you’re in a jury trial.” —P05

P02 (former litigator turned JAMS arbitrator) and P13 (owner’s advisor) both noted that the confidentiality of arbitral proceedings is a particularly valued feature in P3 contexts, where public entities and major concessionaires have reputational interests in keeping dispute details out of public court records.

However, three participants introduced an important jurisdictional constraint that cannot be overlooked: certain states—Virginia and Florida were specifically cited—impose statutory limitations on the ability of public entities to submit disputes to binding arbitration, requiring litigation in a court of competent jurisdiction as the final step. This constraint was documented by P04 (who represents public agencies in Washington State), P05 (Virginia practice), and P12 (Tampa Airport, Florida):

“Our final resolution process is litigation... We don’t arbitrate.” —P12

The implication for framework design is that any recommended ADR structure must contain provision for jurisdiction-specific adaptation at the final tier. The phrase “arbitration or litigation as applicable to the jurisdiction” appears repeatedly in the most thoughtfully drafted contracts reviewed by participants, and the proposed framework should reflect this necessary flexibility.

A secondary consensus position was the rejection of non-binding arbitration as a distinct ADR step. Multiple participants (P11, P16) characterized this as a “waste of time” on the grounds that it duplicates the function of either DRB adjudication or mediation without adding proportionate value. P16:

“You either go to arbitration or you go to litigation. You don’t do one and then the other. And usually arbitrations are binding, not non-binding. So the non-binding arbitration seems like a waste of time.” —P16

6.2.7 Theme 7: Jurisdictional Variation — U.S. Fragmentation vs. Canadian Standardization

The comparative case study finding—that Canadian provincial P3 frameworks exhibit greater standardization and prescriptiveness while U.S. frameworks reflect state-level variation and flexibility—was broadly confirmed by participants with cross-jurisdictional experience, and was specifically validated by P16 and P09 as accurate.

P04 and P05 both described the state-by-state variation in U.S. ADR structures, noting that the final resolution mechanism (arbitration vs. litigation) is the most consequential point of differentiation, followed by the presence or absence of a DRB requirement. P05 noted a positive trend toward greater use of DRBs in the U.S., describing it as “more and more” prevalent in recent contracts, consistent with the DRBF’s advocacy efforts.

P15 (Virginia DOT, Maryland DOT, and multiple southeastern state DOT experience) provided the most granular account of U.S. variation:

“Federal really doesn’t do a lot of P3—it’s mostly delegated to the state. So I’ll say state and local, in terms of the main states.” —P15

This delegation to state law creates the fragmentation documented in the case study. Virginia, for example, has a mature P3 framework (the Public-Private Transportation Act) with established ADR practice, while other states have only recent P3 enabling legislation that has not yet generated a body of ADR precedent.

On the Canadian side, P16’s experience in U.S. and Canadian arbitration provided a direct comparative view:

“What I see in the British Columbian contract is very much different than what I’ve seen in my career [in the U.S.].” —P16

The use of independent certifiers in Canadian frameworks—expert designees who make determinations on specific milestone, completion, or tolling issues—was highlighted as a structural feature absent from most U.S. P3 contracts. P03 expressed interest in this mechanism, noting its potential to resolve the specific class of “ha we’re done” disputes (substantial completion, milestone achievement) that frequently escalate when parties disagree about project status without access to a fast, expert determination mechanism.

6.2.8 Theme 8: Time and Process Design

The speed of dispute resolution was identified by multiple participants as a critical design parameter, particularly for the construction phase where unresolved disputes create schedule and cost impacts for all parties. P07, who drafted a recent contract with explicit resolution timeframes at each tier, provided the most granular practitioner data on what practitioners consider workable timelines: ten days at the project level, seven days for a steering committee, and sixty days for mediation triggered by the first face-to-face meeting.

Participants who were shown the proposed framework from this research (which included more compressed timelines based on international best practice references) raised consistent concerns about feasibility. P07 noted:

“The timeframes may be aggressive depending upon the issue... One party may have gained an advantage by slow-walking the process. The other party may be burning \$10,000 a day based on whatever the issue is. If one party has the ability to extend the timeline, that just becomes a leverage point.” —P07

This observation reflects a genuine tension in ADR process design: compressed timelines serve the party under financial pressure to resolve quickly, while elongated timelines may benefit the party that is better resourced for sustained dispute management. P07’s argument against negotiated timelines—that the ability to slow-walk becomes a lever—is a significant practitioner insight that argues for fixed (rather than party-negotiated) timeframes built into the contract at the formation stage.

P02 offered a cautionary account of over-elaborate tiered processes:

“It took two or three years to get through that [tiered process], to even get to the point where litigation could be filed. And then, of course, they had years to go after that... Partly it was just fatigue. Fatigue and how much it was going to cost.” —P02

This account suggests that while tiered processes are generally beneficial, poorly designed processes with excessive tiers, unclear triggers, or vague timelines can produce the opposite effect—transforming the dispute resolution process itself into a source of delay and cost.

6.2.9 Theme 9: Dispute Prevention as a Distinct Strategic Orientation

A theme that emerged inductively from the interview data—rather than being directly elicited by the questionnaire—is the distinction between dispute prevention and dispute resolution as

fundamentally different orientations in practice. While the academic and contractual literature treats ADR largely as a response to disputes that have already arisen, several participants (most prominently P01, P06, P08, P10) articulated a practice philosophy centered on preventing disputes from ever reaching formal ADR processes.

P10's model, described in Theme 5 above, operationalizes dispute prevention through pre-claim mediation. P08 described how the Big Dig—a project of approximately \$15 billion with approximately 20,000 contractor-generated issues—processed those issues through a proactive funnel of negotiation, DRB, and mediation that resulted in only one or two items reaching litigation. P01 described the accountability mechanism of DRB oversight as a form of “relational capital” that keeps parties negotiating in good faith.

P06, drawing on decades of DRB experience, characterized the prevention function in explicit behavioral terms:

“I’m a firm believer in getting things solved at the project level... Get them settled early, don’t let them fester. Even though maybe you’re a little short on the money that you might receive, it’s probably better to take it than to spend a lot of money in the future on arbitration or litigation.” —P06

The prevention orientation is practically significant for framework design because it argues for ADR provisions that activate earlier in the project lifecycle, not merely upon dispute notice. Mechanisms such as standing DRBs that begin site visits at project mobilization, partnering agreements with built-in conflict monitoring, and regular executive-level project health reviews all embody this orientation. The proposed framework’s inclusion of a “Step 0” (risk huddle or partnering arrangement prior to any dispute notice) was explicitly validated by P07 and P08 as sound practice.

6.2.10 Theme 10: Structural Gaps and Underexplored Terrain

The final theme groups practitioner-identified limitations and gaps in existing P3 ADR practice that the research literature has not yet adequately addressed. Three sub-categories emerged.

6.2.10.1 Flow-Down ADR Provisions

P03 and P07 both flagged the failure of ADR provisions in head concession agreements to cascade down to the concessionaire's subcontracts—particularly the design-build subcontract. P03 described her own practice innovation of “Exhibit K” flow-down provisions in WMATA contracts as a partial solution, but acknowledged that these provisions are still exception rather than rule. P15's finding (discussed under Theme 1) that many P3 disputes originate within the concessionaire entity at the design-builder/engineer interface makes this gap particularly significant: a dispute at this level may not even be cognizable under the concession agreement's ADR clause, leaving the parties to resort to their subcontract's (often inferior) dispute resolution mechanism.

6.2.10.2 Operations Phase ADR

The research literature on P3 ADR—and the proposed framework—focuses predominantly on the design and construction phases. Multiple participants noted that DBFOM concessions generate qualitatively distinct dispute types during the operations and maintenance phase, including performance standard compliance, revenue-sharing disputes, lifecycle maintenance obligations, and refinancing triggers. P06 (the only participant with direct DRB experience on a dispute originating from operational revenue-sharing) and P10 (who described an airport light rail project approaching completion with ongoing operational mediations) both identified this phase as requiring distinct ADR treatment that most current contracts do not provide.

6.2.10.3 Scope Clarity at Contract Formation

P09 offered the most analytically precise account of the upstream cause most commonly leading to construction disputes:

“The most common reason is that contractors spend more money and time than they had estimated and are trying to recover—by finding a reason to make other people responsible. And sometimes they're right, and sometimes they're not.” —P09

This observation points to a limitation of any ADR framework: no downstream dispute resolution mechanism can fully compensate for scope ambiguity at the contract formation stage. P04 noted that unclear scope definition is “one of the biggest things” on design-build and P3 projects specifically, and P11 reinforced this by pointing to the structural incentive that design-builders face to resolve scope uncertainty in their favor post-award. This suggests that robust P3 ADR frameworks should be complemented by upstream contract quality assurance measures—clearer scope definitions, better geotechnical investigation programs, and more complete owner-provided design packages—that reduce the pre-conditions for dispute generation.

The table below summarizes the ten themes identified from the thematic analysis, associating each with its key finding, the level of practitioner agreement, and its implications for the framework. Together, the table illustrates a clear hierarchy of confidence in the findings. The highest consensus was seen in two themes: the widespread support for multi-tiered ADR (Theme 2), with fifteen of sixteen participants giving it a rating of four or five, and the recognition of senior-executive involvement as a crucial tier (Theme 4), which received the highest average rating of 4.9. These are the elements on which the framework is most reliably based. A second group of themes—dispute landscape, arbitration versus litigation, jurisdictional variations, time and process design, dispute prevention, and structural gaps—also garnered high but more nuanced agreement, often influenced by contextual factors such as jurisdictional limits on public-entity arbitration or the potential bias from practitioner interviews focused on dispute experience. Only the themes of Dispute Review Board and mediation (Themes 3 and 5) showed genuinely mixed levels of agreement, and these are also the themes with the most notable practitioner disagreements. The final column clarifies the analytical thread running through the dissertation: each theme, regardless of the level of consensus, has a specific and traceable implication for the framework’s design, ensuring that every element of the framework is supported by the interview data.

Table 46 Summary of the ten thematic findings, consensus levels, and framework implications

Theme	Key finding	Consensus level	Implication for the framework
1. Dispute landscape	Disputes are common but follow a bimodal pattern (projects have either very few or many); the construction phase is where disputes crystallize; leading root causes are differing site conditions, owner-retained utility and real-estate risk, communication breakdown, and the design-build interface.	High (with selection-bias caveat)	Supports early prevention (Step 0) and flow-down provisions to the design-build subcontract.
2. Multi-tiered ADR	Near-unanimous endorsement of multi-tiered over single-step resolution; 15 of 16 rated it 4 or 5, driven by the long-term relational nature of P3 concessions.	Very high	Validates the core multi-tiered architecture of the framework.
3. Dispute Review Boards	DRBs reframed as instruments of prevention, not merely resolution; binding vs. non-binding and admissibility are actively contested; dual technical/commercial boards endorsed for mega-projects.	Mixed (strong on prevention; divided on bindingness and admissibility)	Constitute a standing DRB at mobilization; state the admissibility position explicitly; allow dual panels above a complexity threshold.
4. Senior executive tier	The most robust consensus in the study (mean 4.9; one participant would rate it 6): executives bring decision authority, commercial perspective, and relational distance.	Highest	Specify genuine authority, non-involvement in the dispute, and a fixed meeting deadline.
5. Mediation	Universally present but its placement, mandatory character, and effectiveness diverge; a pre-claim, preventive mediation model emerged as an innovation.	Moderate	Make mediation optional with a short acceptance window; require a qualified mediator; place it after the DRB.
6. Arbitration vs. litigation	Arbitration is preferred for expertise, confidentiality, and speed, but statutory limits bar binding arbitration for public entities in some states; non-binding arbitration is rejected as redundant.	High (with a jurisdictional caveat)	Adopt jurisdiction-adaptive language at the final tier; exclude non-binding arbitration.
7. Jurisdictional variation	U.S. fragmentation versus Canadian standardization is confirmed; the Canadian Independent Certifier is a notable structural feature absent from most U.S. contracts.	High	Provide jurisdiction toggles; consider incorporating an Independent Certifier role.
8. Time and process design	Speed is a critical design parameter; timeframes should be fixed by contract rather than party-negotiable to prevent slow-walking; over-tiering can itself cause delay.	High	Build fixed, non-extendable timeframes into each tier.
9. Dispute prevention	Prevention is a distinct strategic orientation from resolution; the most effective programs activate before any dispute notice is filed.	High (emerged inductively)	Adopt a standing Step 0 (partnering / risk huddles) as a first-order design element.
10. Structural gaps	Two gaps absent from both the literature and practice: ADR provisions that fail to flow down to the design-build subcontract, and the absence of operations-phase dispute mechanisms.	High	Add a model flow-down exhibit and an operations-phase ADR annex.

6.3 Points of consensus across the expert interviews

The consensus items are important for two main reasons. First, they highlight the design principles that are widely accepted across a diverse group of professionals, including construction attorneys, dispute board members, mediators, arbitrators, owner's advisors, and technical consultants—indicating these are robust conclusions not limited to specific roles. The shared view that disputes primarily crystallize during the construction phase, along with the strong support for

multi-tiered ADR, are insights that remain consistent regardless of the professional perspective. Second, these consensus points provide an uncontested foundation for the framework, allowing the analysis to focus on smaller, genuinely debated issues. Some points are especially significant because they come from participants whose roles might have suggested a different view, such as the agreement that non-binding arbitration has little value and that resolution timeframes should be fixed rather than negotiable—views based on real-world practitioner experience of ADR failures. Together, these twelve points form the empirical foundation of the framework—elements that can be confidently adopted because they represent a settled practitioner consensus, not a contested or theoretical stance.

The table below isolates the twelve propositions on which the experts substantively agreed, together with the strength of each agreement and the participants who supported it.

Table 47 Summary of the ten thematic findings, consensus levels, and framework implications

Theme	Key finding	Consensus level	Implication for the framework
1. Dispute landscape	Disputes are common but follow a bimodal pattern (projects have either very few or many); the construction phase is where disputes crystallize; leading root causes are differing site conditions, owner-retained utility and real-estate risk, communication breakdown, and the design-build interface.	High (with selection-bias caveat)	Supports early prevention (Step 0) and flow-down provisions to the design-build subcontract.
2. Multi-tiered ADR	Near-unanimous endorsement of multi-tiered over single-step resolution; 15 of 16 rated it 4 or 5, driven by the long-term relational nature of P3 concessions.	Very high	Validates the core multi-tiered architecture of the framework.
3. Dispute Review Boards	DRBs reframed as instruments of prevention, not merely resolution; binding vs. non-binding and admissibility are actively contested; dual technical/commercial boards endorsed for mega-projects.	Mixed (strong on prevention; divided on bindingness and admissibility)	Constitute a standing DRB at mobilization; state the admissibility position explicitly; allow dual panels above a complexity threshold.
4. Senior executive tier	The most robust consensus in the study (mean 4.9; one participant would rate it 6): executives bring decision authority, commercial perspective, and relational distance.	Highest	Specify genuine authority, non-involvement in the dispute, and a fixed meeting deadline.
5. Mediation	Universally present but its placement, mandatory character, and effectiveness diverge; a pre-claim, preventive mediation model emerged as an innovation.	Moderate	Make mediation optional with a short acceptance window; require a qualified mediator; place it after the DRB.
6. Arbitration vs. litigation	Arbitration is preferred for expertise, confidentiality, and speed, but statutory limits bar binding arbitration for public entities in some states; non-binding arbitration is rejected as redundant.	High (with a jurisdictional caveat)	Adopt jurisdiction-adaptive language at the final tier; exclude non-binding arbitration.
7. Jurisdictional variation	U.S. fragmentation versus Canadian standardization is confirmed; the Canadian Independent Certifier is a notable structural feature absent from most U.S. contracts.	High	Provide jurisdiction toggles; consider incorporating an Independent Certifier role.

8. Time and process design	Speed is a critical design parameter; timeframes should be fixed by contract rather than party-negotiable to prevent slow-walking; over-tiering can itself cause delay.	High	Build fixed, non-extendable timeframes into each tier.
9. Dispute prevention	Prevention is a distinct strategic orientation from resolution; the most effective programs activate before any dispute notice is filed.	High (emerged inductively)	Adopt a standing Step 0 (partnering / risk huddles) as a first-order design element.
10. Structural gaps	Two gaps absent from both the literature and practice: ADR provisions that fail to flow down to the design-build subcontract, and the absence of operations-phase dispute mechanisms.	High	Add a model flow-down exhibit and an operations-phase ADR annex.

6.3.1 Points of divergence across the expert interviews

The experts' differing opinions on certain items are not errors but valuable insights, highlighting where framework choices must be made deliberately rather than simply accepted. These disagreements are also instructive because both perspectives come from experienced practitioners and are justifiable. For example, the debate over DRB recommendation admissibility balances expert opinion's legitimacy against concerns that admissibility might suppress honesty; neither view is outright wrong. The framework handles these divergences consistently: it defaults to the dominant practice when one exists, keeps alternatives open for unresolved issues (like admissibility), and uses contextual mechanisms for disagreements rooted in different project situations (like dispute frequency explanations). This transparent, non-impositional approach ensures the framework faithfully represents the full spectrum of interview evidence, including conflicting viewpoints.

The table below shows the six questions where experts had real disagreements, listing the opposing positions alongside the participants who held them and illustrating how each disagreement is addressed in the framework.

Table 48 Points of divergence across the expert interviews and their resolution in the framework

Contested question	Position A	Position B	Significance / how resolved in the framework
Should DRB recommendations be binding or non-binding?	Non-binding (dominant U.S. practice) — P04, P05, P08, P09, P14	Hybrid threshold-binding, e.g., decisions under ~\$50k binding — P06	Framework defaults to non-binding (driving settlement via BATNA), with threshold-binding offered as an option.

Should DRB recommendations be admissible in later proceedings?	For admissibility — the expert view should not be ignored (P05, P06)	Against — admissibility chills candor and invites strategic behavior (P04, P09)	Genuinely unresolved; the framework requires the position to be fixed explicitly at the drafting stage.
Should mediation be mandatory or optional?	Optional / mutually agreed (P07 and a majority)	A near-obligatory step before binding resolution (P01, P03, P08, P12, P13, P14)	Framework adopts optional mediation with a short acceptance window.
How effective is mediation?	Highly effective; used “almost always” (P05, P12)	Qualified — can become a formality, and non-expert mediators are easily misled (P06, P11)	Framework requires a technically qualified mediator and keeps the step optional.
Do intermediate tiers help in very large disputes?	Helpful for the great majority of disputes (majority view)	Become procedural formalities in entrenched \$100M+ disputes (P02)	Framework retains the tiers but adds value-based triage to avoid over-processing.
How frequent are P3 disputes?	High — around 4–5 on a 5-point scale (P11)	Lower at the owner-concessionaire interface specifically (P03, P12, P13)	Reconciled by the bimodal pattern (P14): frequency tracks relational quality and ADR maturity, not complexity alone.

6.4 Framework Validation and Refinement Recommendations

Participants were presented with a proposed multi-tiered ADR framework for DBFOM concessions and invited to assess its relevance, validate its structure, and suggest modifications. The following refinements are supported by the combined weight of participant feedback.

① Retain the “Step 0” partnering/risk huddle as a contractual obligation. The inclusion of a proactive, pre-dispute monitoring mechanism at the commencement of the concession was endorsed by P06, P07, P08, and P10 as consistent with best practice and preventive philosophy. This step should be specified as a standing obligation, not triggered by dispute notice.

② Fix resolution timeframes at each tier in the contract, without provision for party-negotiated extension. P07’s concern that negotiable timeframes create a slow-walking lever supports the use of fixed, contractually specified deadlines. However, differentiated timelines by dispute type or value may be appropriate (e.g., shorter windows for decisions required to keep construction moving; longer windows for financial claims that do not affect schedule).

③ Specify DRB as a standing board constituted at project mobilization, not convened ad hoc. The prevention value of DRBs is most fully realized when the board conducts regular site visits

throughout the project, not when it is convened only after a formal dispute notice. Quarterly meeting schedules, with provision for emergency hearings, reflect current best practice.

④ For DBFOM projects above a defined financial threshold, provide for specialized board tracks (technical vs. commercial/financial). This structure, documented in Florida DOT practice and certain Canadian provincial frameworks, was endorsed by P01, P07, P12, and P16 as appropriate for mega-projects with complex financial structures.

⑤ Treat mediation as optional (by mutual agreement) rather than mandatory. The weight of practitioner opinion holds that mandatory mediation generates pro-forma compliance rather than genuine engagement. The framework should provide a mechanism for one party to request mediation and a short window (e.g., five business days) for the other to accept or decline.

⑥ Specify jurisdiction-adaptive language at the final resolution tier. Given statutory constraints on arbitration for public entities in certain states, the final tier should read “binding arbitration, or if prohibited by applicable law, litigation in a court of competent jurisdiction.”

⑦ Cascade ADR provisions to the design-build subcontract. Practitioners flagged the absence of flow-down provisions as a significant gap. The framework should include model flow-down ADR language for the concessionaire-to-design-builder interface, adapted from the concession agreement ADR structure.

⑧ Include an operations-phase ADR annex for DBFOM concessions. Given the structurally distinct nature of operations-phase disputes (performance standards, lifecycle maintenance, revenue-sharing, refinancing), the framework should provide a tailored operations-phase ADR mechanism that activates upon commencement of commercial operations and remains in force for the concession term.

Table 32 summarizes each refinement, its application tier, and the empirical basis in the interview data. Each refinement represents a specific departure from common practice observed in the case study contracts and is supported by practitioner evidence from the interview corpus.

Table 49 Eight practice-grounded refinements to the preliminary ADR framework

#	Tier	Refinement	Empirical basis
1	Step 0	Constitute the proactive monitoring obligation as a standing contractual requirement, activated at project mobilization and not contingent on the issuance of a dispute notice.	P06, P07, P08, P10; Theme 9
2	Steps 1–4	Fix resolution timeframes at each tier in the contract. Timeframes should not be subject to party-negotiated extension, which creates a slow-walking leverage point.	P07; Theme 8
3	Step 3	Constitute the DRB at project mobilization as a standing board, conducting quarterly site visits from contract commencement.	P01, P05, P06, P08, P14; Themes 3, 9
4	Step 3	For DBFOM projects above a defined complexity or contract value threshold, provide for a dual-panel DRB structure: a technical panel for construction disputes and a commercial/financial panel for finance, revenue, and performance disputes.	P01, P07, P12, P16; Theme 3
5	Step 4	Designate mediation as optional by mutual agreement, with a five-business-day acceptance window to prevent indefinite delay.	P05, P07, P11, P12, P14, P15; Theme 5
6	Step 5	Specify jurisdiction-adaptive language at the final tier: "binding arbitration, or where prohibited by applicable law, litigation in a court of competent jurisdiction."	P04, P05, P12, P15; Theme 6
7	All tiers	Cascade ADR provisions to the design-build subcontract as a standard exhibit, mirroring the tiered structure of the concession agreement.	P03, P07, P14, P15; Theme 10
8	Post-COD	Include an operations-phase ADR annex activating at commercial operation date, with panel compositions and process timelines calibrated to operations and maintenance dispute types.	P06, P10, P12; Theme 10

6.5 Expert Interview Conclusions

This thematic analysis of sixteen expert practitioner interviews provides rich empirical grounding for the development of a practice-validated ADR framework for DBFOM infrastructure concessions. Several conclusions merit particular emphasis.

First, the universal endorsement of multi-tiered ADR processes among practitioners across all professional roles and jurisdictions confirms the central premise of this research. This mirrors the initial finding in the SLR section on the importance of multi-tiered ADR mechanisms (Aziz & Muiruri, 2023). There is no credible practitioner voice advocating single-step resolution in P3 contexts. The debate among experts is not about whether to use a tiered approach but how to design it well.

Second, DRBs are widely recognized as the most effective formal mechanism in the tier stack, but their effectiveness largely stems from their role as dispute-prevention instruments rather than as adjudicators. The prevention orientation—operationalized through regular site visits, standing monitoring obligations, and the behavioral discipline created by scheduled DRB oversight—is the primary value proposition of DRBs in practice, and this should be reflected in how DRB provisions are written and implemented.

Third, senior executive escalation emerged as the single most critical tier, rated highest by participants across all backgrounds. Its value lies in depersonalizing field-level conflicts, unlocking commercial resolution pathways invisible to ground-level staff, and providing the decision-making authority necessary to finalize compromises that junior personnel cannot authorize.

Fourth, the U.S. fragmentation problem documented in the case study is confirmed by practitioners, who identify state-specific statutory constraints (particularly on arbitration for public entities) and the absence of a federal P3 ADR standard as the primary drivers of inconsistency. Greater standardization, drawing on Canadian provincial models and international frameworks, is broadly supported by the practitioner community.

Fifth, the interview data reveal underexplored terrain that points to productive directions for future research: flow-down ADR provisions at the concessionaire-to-design-builder interface, operations-phase ADR design, and the role of dispute prevention (as distinct from dispute resolution) as an organizational and contractual strategy. These gaps present opportunities for both scholarly contribution and practical improvement in how P3 contracts are drafted.

CHAPTER 7 THE REFINED MULTI-TIER ADR FRAMEWORK

7.1 Overview and Governing Principle

The refined multi-tier alternative dispute resolution (ADR) framework presented in this section is the primary output of the three phases of this research. It builds on the preliminary framework derived from the case studies, incorporating eight practice-grounded refinements validated through sixteen semi-structured interviews with construction attorneys, dispute board members, mediators, arbitrators, owner's advisors, and technical consultants. The framework is designed for adoption in DBFOM concession agreements and the subcontracts that flow from them, with particular application to the North American P3 market.

The framework is structured as a six-level escalation ladder, labeled Step 0 to Step 5, each offering a defined opportunity for resolution before moving to the next level. This ladder is illustrated in Fig. 28 and summarized in Table 33. An option to resolve disputes exists at every stage; the aim is to settle issues early, avoiding entrenched positions, rising costs, and damage to the long-term concession relationship.

The core principle guiding every design decision in this framework is that addressing disputes in long-term infrastructure concessions early minimizes disruption and leads to more efficient resolution. This principle incorporates both relational and economic aspects. Relationally, the DBFOM concession fosters a multi-decade partnership that relies on a healthy working relationship between the public owner and the concessionaire. Economically, delaying dispute resolution during construction increases both costs and schedule risks for both parties due to cumulative effects. To address these concerns, the framework emphasizes early conflict prevention through structured

measures before disputes arise and reserves formal adjudication for the minority of cases that cannot be settled through negotiation or non-binding expert review.

The framework itself does not settle disputes; instead, the parties involved are responsible for resolving them. What the framework offers is a structured sequence of contexts, each with clearly defined participants, authority levels, timeframes, and procedural expectations, designed to facilitate resolution. The effectiveness of implementation is just as crucial as the quality of the design. For example, a well-crafted ADR ladder in a poorly managed concession won't stop disputes from escalating. Conversely, a well-managed concession with a basic ADR clause can often resolve most disputes effectively. Essentially, the framework focuses on contractual and procedural design, while the relational and management aspects are left to the parties involved.

7.2 Framework Summary

Table 33 provides a consolidated overview of the six tiers, their timeframes, categorical classification, and key design features. Each tier is described in detail in the sections that follow.

Table 50 Refined multi-tier ADR framework — overview of tiers

Tier	Step	Timeframe	Category	Key design features
Step 0	Proactive monitoring	Ongoing (standing)	Pre-dispute	Biweekly partnering meetings; shared dispute log maintained throughout concession; DRB site visits on quarterly schedule from project mobilization. Activates at contract commencement, not upon dispute notice.
Step 1	Project-level negotiation	7–14 days	Internal	Project manager and counterpart field representatives. Formal written notice required to start the clock. Written response obligation within defined period. Short window preserves recency of facts and prevents entrenchment.
Step 2	Senior executive review	10–21 days	Internal	Representatives holding genuine decision-making authority, not directly involved in the events giving rise to the dispute. Fixed, non-extendable meeting deadline. Full commercial relationship visible to this tier.
Step 3	Dispute review board	30–90 days	Third-party	Standing board constituted at project mobilization. Non-binding recommendation with designated admissibility position stated in the contract. Dual-panel structure (technical / commercial) for DBFOM projects above defined complexity threshold.

Step 4	Mediation	30–60 days	Third-party	Optional by mutual agreement, with a five-business-day acceptance window. Technically qualified mediator with construction and infrastructure expertise. Positioned after the DRB recommendation to maximize settlement likelihood.
Step 5	Final binding resolution	Varies	Binding	Binding arbitration (preferred); litigation in a court of competent jurisdiction where prohibited by applicable statute. Non-binding arbitration excluded as redundant with Steps 3 and 4.

Note. Timeframes are specified as fixed contractual obligations and are not subject to party-negotiated extension. The

"Category" column classifies each step by the nature of the resolution process: Pre-dispute (standing obligation, not triggered by notice); Internal (party-to-party resolution without third-party involvement); Third-party (expert or facilitated intervention); Binding (final binding determination).

7.2.1 Step 0 — Proactive Monitoring (Standing Obligation, Pre-Dispute)

Step 0 is the most conceptually distinctive aspect of the refined framework and is the element most significantly altered by the expert interview findings compared to the initial case study framework. It is not a dispute resolution mechanism but a dispute governance mechanism, an ongoing contractual obligation that functions continuously from project start to finish, whether or not a formal dispute is noticed.

The mechanism consists of three parts. First, biweekly or monthly project health meetings are held between the owner's and concessionaire's representatives at the field level, where a shared dispute log is reviewed and any new issues, whether or not they have reached formal notice, are discussed. Second, the Dispute Review Board (DRB) conducts regular site visits, scheduled quarterly from the time the board is set up at mobilization. Third, a formal issue escalation process automatically marks items on the dispute log that remain unresolved for a certain period, usually 30 days, for senior executive review at the next meeting.

The foundation for recognizing Step 0 as a separate level comes from a consistent finding in the expert interview data: the main benefit of a DRB lies not in its formal hearings and recommendations, but in the proactive bilateral resolution behavior it fosters. One participant noted that the week before each DRB meeting saw more genuine progress between the parties than the

entire previous month, as neither side wanted to risk expanding the issues list in front of the board. This effect occurred without a formal hearing. This anticipatory dynamic, which can be called the accountability effect of DRB oversight, is the key way in which Step 0 adds value.

The implications for contract drafting are substantial. A DRB clause that activates only upon a formal dispute notice fails to realize its potential benefits. Conversely, a clause that establishes the board at mobilization, mandates quarterly site visits as a regular duty, and requires joint review of a shared dispute log at each visit establishes the accountability framework necessary for the anticipatory effects to take hold. These are not mere administrative details — they are essential conditions for the DRB's most valuable function to be fulfilled.

Step 0 is considered a pre-dispute obligation because it is not initiated by any dispute-specific event. It starts when the contract begins and continues until substantial completion. The point labeled "dispute notice issued" in Fig. 1 marks the start of the formal escalation process, Steps 1 through 5. Issues that are identified and resolved during Step 0 do not enter the formal escalation ladder. In well-managed concessions, most issues are effectively resolved at this initial stage.

7.2.2 Step 1 — Project-Level Negotiation (7–14 Days)

Step 1 represents the initial level of the formal escalation process, initiated by submitting a written dispute notice. This keeps the dispute within the project team, comprising the project manager, site superintendent, resident engineer, or their equivalents, to facilitate organized, time-limited negotiations.

Starting the formal process at the project level rather than immediately involving more senior staff is justified for three reasons. First, project-level team members possess the most direct and complete knowledge of the events leading to the dispute. In construction, delays diminish evidence quality as witnesses leave, conditions change, and records become harder to gather. A quick

resolution at Step 1 maintains the integrity of the evidence. Second, many disputes, especially those concerning scope, minor differing conditions, or routine change orders, can be settled at this level if appropriate procedures are followed, requiring both parties to participate officially within a set timeframe. Mandating written notices and responses compels clear articulation of positions, often clarifying misunderstandings. Third, a short timeframe of seven to fourteen days creates a sense of urgency. Since time in construction has direct financial implications, unresolved disputes at the project level lead to accumulating costs and schedule delays.

The fixed, non-extendable nature of the Step 1 timeframe is a specific refinement from expert interviews, marking a significant departure from common practice. Practitioners noted that the ability to slow down the ADR process, by negotiating extensions, seeking additional information, or delaying internal approvals, was one of the most damaging tactics in P3 dispute management, often used by the financially more resilient party. Fixed timeframes eliminate this issue. The financially weaker party cannot be further disadvantaged by a process that allows the stronger party to extend deadlines indefinitely.

7.2.3 Step 2 — Senior Executive Review (10–21 Days)

Step 2 is the top-rated tier within the entire expert interview corpus, with an average Likert score of 4.9 out of 5, the most strongly agreed-upon result in the study. Senior executive escalation is not just another chance for bilateral negotiation; it represents a fundamentally different type of resolution that offers three capabilities unavailable at the project level.

The first issue is decision-making authority. Field personnel negotiating a differing site condition claim for six weeks typically cannot approve substantial change order credits or schedule extensions without higher approval. Involving senior executives with that authority opens up solutions that the project team cannot access on their own, regardless of their willingness to resolve the issue.

The second perspective is from a commercial standpoint. Senior executives have a comprehensive view of the entire commercial relationship between the owner and the concessionaire. This includes future work, reputational stakes, financing ties, and the long-term value of the concession partnership, aspects the project team does not see. This broader commercial view often uncovers solutions that are sensible for the relationship overall, even if they are hard to justify solely at the project level. A concessionaire executive who recognizes the importance of a long-term partnership with a public authority might be willing to incur a cost that a project manager, evaluated only on project metrics, would reject.

The third factor is relational distance. When a dispute remains unresolved long enough to escalate to Step 2, it often develops personal elements that complicate resolution: field staff may have drafted letters, taken sides, and sometimes let the issue become intertwined with personal relationships. In contrast, executives who are contractually mandated not to be directly involved in the initial events come to negotiations without this emotional baggage. Their detachment from the facts is actually an advantage, not a hindrance.

This tier's contract drafting requirements demand greater specificity than usual. While most P3 contracts include a senior executive escalation step, they often lack details such as that the designated representatives must genuinely have decision-making authority, not just be more senior than the project manager. They also should not have been directly involved in the dispute's events and must meet within a fixed, non-extendable timeframe. Omitting these details often leads to delays and bad-faith engagement, which practitioners frequently identify as the most common failure mode for this tier.

7.2.4 Step 3 — Dispute Review Board (30–90 Days)

At Step 3, a third party becomes involved in the resolution process for the first time. The Dispute Review Board (DRB) is composed of independent experts, usually three members, including

engineers, construction lawyers, or seasoned project executives, who have been part of the project since its mobilization. They regularly visit the site and gain a comprehensive understanding of the project's history, conditions, and commercial background, insights that an ad hoc adjudicator cannot match.

This prior knowledge gives the DRB a key structural advantage over other adjudication methods. Unlike an arbitral tribunal appointed after a formal claim, which needs months of briefing before addressing the merits, a DRB that visits the site quarterly, reviews the shared dispute log, and meets with the parties already has an understanding of the project. It can then receive presentations, conduct site inspections as needed, ask informed questions, and provide a recommendation within 30 to 90 days of referral, much faster than comparable adjudicative processes.

Under the revised framework, DRB recommendations are non-binding, aligning with common U.S. practices and expert consensus. Properly designed non-binding recommendations often resolve most cases without enforcement. Instead of enforceability, the mechanism encourages parties to improve their BATNA. Recommendations from three experienced, project-aware experts offer a strong non-binding evaluation of the merits, minimizing reasonable disputes and reducing the incentives for arbitration or litigation for both parties.

The question of whether DRB recommendations are admissible in later proceedings is a design issue that the current framework does not explicitly address. Expert interviews revealed a real and meaningful disagreement: proponents of admissibility believe that the DRB's expert knowledge should be accessible to the arbitral tribunal, while opponents argue that allowing admissibility encourages strategic behavior, reducing openness and harming the informal, problem-solving nature of the hearing. The framework suggests that this issue should be resolved during contract drafting, with all parties involved, and that the final decision, whether recommendations are admissible or not, should be clearly specified in the DRB provisions. The greatest risk is ambiguity:

parties entering a DRB hearing with differing expectations about how the evidence may be used later, which could undermine the process.

For DBFOM projects exceeding a specific complexity or contract value, the updated framework incorporates a dual-panel Dispute Resolution Board (DRB) system. Construction and physical work issues—such as site condition variations, design flaws, and construction method disputes—necessitate a panel with engineering and construction expertise. Meanwhile, finance, revenue, and performance-related disputes, like availability payment calculations, revenue-sharing mechanisms, lifecycle cost distribution, and refinancing triggers, require a panel with financial and commercial expertise. These dispute types are inherently different and thus benefit from different expert compositions. The dual-panel structure, validated by practices in Florida DOT and some Canadian provinces, ensures each dispute type is handled by the most qualified panel, optimizing dispute resolution.

7.2.5 Step 4 — Mediation (30–60 Days, Optional)

Mediation is positioned at Step 4, after the DRB recommendation and before the final binding resolution, rather than before the DRB, as is common in typical commercial ADR processes. This sequence is based on findings from expert interview data: mediation is most likely to help reach a negotiated settlement when parties have a clear, expert assessment of the merits available to them. The DRB recommendation at Step 3 provides exactly that. A mediator with a DRB recommendation can better facilitate a settlement discussion than one working with only unadjudicated information. Similarly, parties with a clearer understanding of the dispute and others' positions are more likely to reach a mediated agreement.

Mediation is made optional by mutual agreement, with a five-business-day acceptance period. Experts agree that mandatory mediation, where the contract requires mediation regardless of the parties' willingness or intent to resolve, often leads to superficial compliance: parties attend

because it's required, not because they want to settle. This process takes time and costs money but offers limited benefit. By making mediation optional and setting a brief acceptance window, it ensures that when mediation does happen, both parties have actively chosen it. This mutual selection increases the chances of success.

The mediator qualification requirement is intentionally built into the framework's design. In construction and infrastructure disputes, a mediator lacking genuine technical expertise, such as in construction sequencing, differing conditions analysis, delay methodology, or P3 financial structures, faces a significant disadvantage and risks being misled by biased technical presentations. The contractual clause should mandate that mediators have proven experience in construction dispute resolution and, for cases involving finance and revenue aspects of a DBFOM concession, familiarity with P3 financial structures. Choosing mediators from reputable panels such as JAMS or AAA, or from those with certified construction-neutral programs, is recommended.

7.2.6 Step 5 — Final Binding Resolution (Jurisdiction-Adaptive)

Step 5 results in a binding outcome. In the refined framework, arbitration serves as the preferred final step. Practitioners highlight several benefits: the ability to choose arbitrators experienced in construction and infrastructure from panels like JAMS and AAA; greater procedural control and flexibility compared to courts; confidentiality, which is especially important in the P3 context where public entities and major concessionaires want to protect their reputations by avoiding public records of disputes; and a significantly shorter time to resolution compared to court processes in most jurisdictions.

The framework mandates a jurisdiction-specific carve-out at this level. Several U.S. states, such as Virginia and Florida, impose statutory limitations on public entities' ability to submit disputes to binding arbitration, instead requiring litigation in a court of competent jurisdiction as the definitive resolution process. A framework that fails to account for this limitation cannot be practical

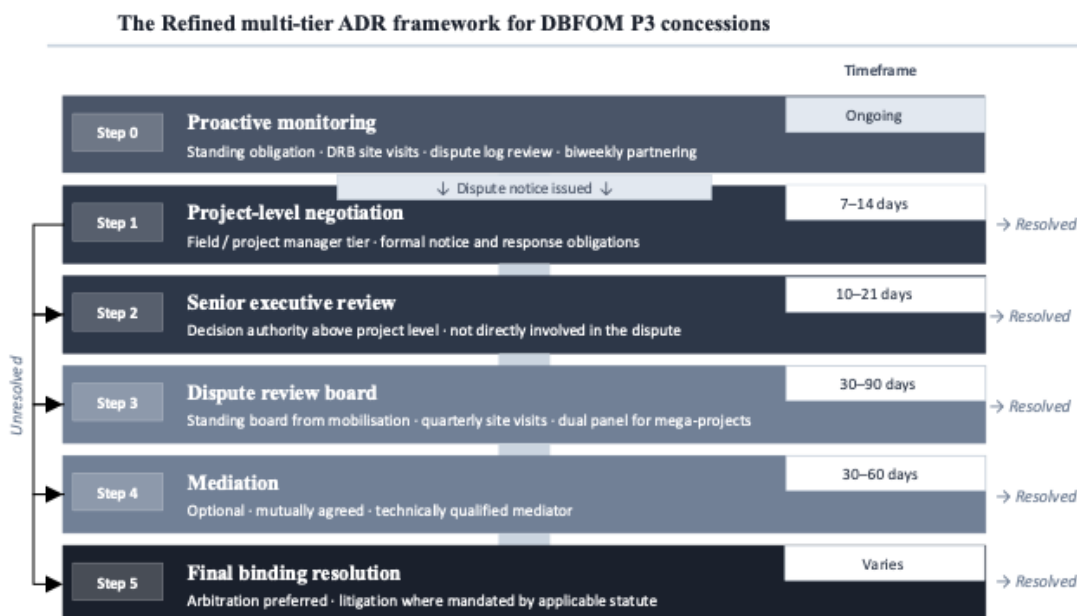
for a large portion of the U.S. P3 owner market. The suggested contractual wording for this tier is:

"Binding arbitration administered by [designated provider] in accordance with its Construction Arbitration Rules; or, where binding arbitration is prohibited by applicable statute, litigation in a court of competent jurisdiction in [designated forum]."

The framework explicitly omits non-binding arbitration as a separate ADR step. Non-binding arbitration, which involves an expert determination that is not binding, usually by a single arbitrator, serves the same purpose as the DRB at Step 3 but lacks the DRB's project knowledge advantage. It also mirrors the mediated settlement role in Step 4, but without the relational emphasis. In practice, non-binding arbitration tends to increase time and costs without offering significantly better resolution outcomes than those achieved through Steps 3 and 4. If parties want a non-binding expert opinion before proceeding to binding arbitration, they can rely on the DRB recommendation for that purpose.

Figure shows the proposed refined framework.

Figure 31 Proposed Refined Framework



7.3 Operations-Phase ADR Annex

DBFOM concessions stand out from other infrastructure delivery methods due to their extended post-construction period, during which the concessionaire manages, operates, and sometimes finances the infrastructure. This operations and maintenance (O&M) phase, which usually lasts 20 to 40 years after substantial completion, gives rise to dispute types that differ fundamentally from construction disputes. As a result, existing P3 ADR clauses, mainly designed for the construction phase, are often inadequate for resolving issues during this extended period.

Common dispute types during the O&M phase include: disputes over compliance related to performance standards and KPIs; disputes about lifecycle maintenance costs, especially where the contract involves condition-based maintenance; disputes over revenue-sharing and shadow tolling, which are triggered by financial performance; disputes related to refinancing events, involving the lender requirements interacting with the concession agreement's financial terms; and termination disputes, where either the public owner or concessionaire claims a material breach of O&M obligations. These disputes require expertise in financial modeling, infrastructure condition assessments, and the interpretation of performance standards, unlike construction-phase disputes. They occur in a different context: not during a live construction schedule where speed is critical, but over a long concession period where precision and durable resolution are more important.

The ADR annex for the operations phase takes effect at the start of commercial operation and provides a tailored dispute management framework for the remainder of the concession period. Its key elements include: a standing operations Dispute Resolution Board (DRB) with expertise in finance and performance, rather than construction; an annual performance review meeting between senior executives from both parties to discuss concession performance and address potential

issues early; and a dedicated fast-track process for urgent disputes, such as when a concessionaire claims that public authority interference with O&M activities constitutes a relief event. The annex follows the main framework's escalation sequence (internal resolution, expert review, facilitated settlement, and binding decision), with mechanisms, timeframes, and expert profiles tailored to O&M dispute resolution.

7.4 Flow-Down Provisions

A key structural gap identified through expert interviews, especially with immediate practical consequences for contract drafters, is the lack of linkage between ADR provisions in the head concession agreement and those in the concessionaire's design-build subcontract. Typically, in a DBFOM concession, the concessionaire is a special-purpose vehicle that doesn't directly undertake design or construction work. Instead, it outsources these tasks to a design-builder, which then hires an engineering firm for the design. The actual physical work and most construction disputes are concentrated within this design-build subcontract layer.

The multi-tier ADR ladder in the concession agreement manages the owner-concessionaire relationship. If the design-build subcontract lacks a similar structure or contains generic dispute resolution clauses that do not follow the tiered approach, the most frequent disputes in P3 delivery are handled by the least detailed ADR provisions in the contract chain. While the concession agreement's ADR ladder is complex, the subcontract's may be limited to a brief arbitration clause.

The refined framework uses a model flow-down exhibit that mirrors the tiered structure of the concession agreement's ADR ladder, adapted for the relationship between the concessionaire and the design-builder. At a minimum, the flow-down provisions should mirror Steps 1 through 5 of the main ladder with suitable modifications to the designated representatives at each level. It should also include the concessionaire's responsibilities under the concession agreement's ADR clauses to avoid parallel proceedings and address the triangular dispute involving the owner,

concessionaire, and design-builder, all of whom are participating in proceedings based on the same underlying issues.

7.5 Implementation Guidance for Contract Drafters

The framework is modular and adaptable to different jurisdictions. No single element is essential in isolation; each element targets a particular failure mode identified in the interview data. Drafters should evaluate which failure modes are most relevant to their specific project context. However, three elements are fundamental and should be included in every implementation.

- Step 0 (proactive monitoring) is a standing contractual obligation, constituting the DRB at mobilization and mandating quarterly site visits. Without this element, the framework's most powerful prevention mechanism is absent.
- Step 2 (senior executive review) should include explicit drafting of authority requirements, non-involvement requirements, and fixed timeframes. Without these specifications, this tier (the most consistently effective in the practitioner evidence) is undermined by the gaps that most commonly prevent it from functioning.
- Step 5 (final binding resolution) includes jurisdiction-specific language that accounts for statutory restrictions on arbitration for public entities. Without this exception, many potential users in the target group would be unable to adopt the framework.

CHAPTER 8 CONCLUSION

8.1 Overview

This dissertation set out to address a persistent and consequential gap in the scholarly and professional literature on public-private partnership (P3) infrastructure projects: specifically, the lack of a comprehensive, evidence-based framework for alternative dispute resolution (ADR)

tailored to design-build-finance-operate-maintain (DBFOM) concession agreements in North America. Although P3 contracts are increasingly adopted for infrastructure projects and tend to lead to disputes due to their long duration and complexity, existing literature offers only fragmented insights, such as isolated case studies, theoretically based but limited empirical prescriptions, and no systematic cross-jurisdictional analysis of ADR clause drafting and execution in active contracts.

This research addressed that gap through a three-phase mixed-methods approach. The first phase involved a systematic literature review (SLR) following the PRISMA framework, analyzing 75 peer-reviewed articles published from 1990 to 2023. The second phase was a documentary case study of 20 DBFOM highway P3 contracts, ten from the United States and ten from Canada, which included a comparative analysis of ADR clause structures and the development of a preliminary multi-tiered framework. The third phase consisted of a qualitative thematic analysis of sixteen semi-structured expert interviews with construction attorneys, dispute board members, mediators, arbitrators, owner's advisors, and technical consultants. This phase validated and refined the initial framework into the six-tier instrument described in the previous chapter.

This conclusion summarizes the findings from all three phases, revisits the research questions that directed the study, highlights its theoretical and practical contributions, acknowledges limitations, and suggests future research directions.

8.2 Summary of Findings by Phase

8.2.1 Phase 1 — Systematic Literature Review

The systematic literature review found that ADR in construction and P3 settings has gained increasing scholarly interest since arbitration clauses became common in standard construction contracts with the 1987 AIA A201 General Conditions update. Publication numbers have generally grown each year, although there was a dip in 2020 due to COVID-19 disruptions. About 45 percent of

relevant publications are from the United States, highlighting its large construction industry and the prominence of the American Arbitration Association and the ASCE Journal of Legal Affairs and Dispute Resolution in Engineering and Construction as key outlets.

The content analysis revealed four main themes in the existing literature. First, arbitration has traditionally been the primary ADR method studied and used, although scholars are increasingly highlighting its limitations in maintaining business relationships and its tendency to become overly procedural. Second, mediation is seen as a more relationship-friendly and cost-effective option, though its use varies by context. Third, since the early 2000s, multi-tiered ADR approaches that combine negotiation, mediation, Dispute Review Boards (DRBs), and arbitration in a graduated process have become the preferred strategy for managing complex, long-term contracts. Fourth, despite their proven effectiveness, Dispute Review Boards remain underused, but they are gaining recognition as the most valuable mechanism within the tiered system, especially in infrastructure projects where ongoing familiarity with the project by the board is possible.

The bibliometric analysis showed that research on multi-tiered ADR systems is the fastest expanding area in the field. The latest developments include mediation-adjudication hybrid models and online dispute resolution platforms. The systematic literature review (SLR) identified a jurisdictional gap, which the second phase aimed to explore: despite the increasing literature on ADR in construction, no study has yet systematically compared ADR clause structures across a sample of North American DBFOM P3 contracts.

8.2.2 Phase 2 — Documentary Case Study

The case study analysis of twenty DBFOM highway P3 contracts offers the most detailed empirical insight of the dissertation: a clause-by-clause comparison of ADR frameworks in the two largest P3 markets in North America, uncovering systematic jurisdictional differences that earlier literature had only described broadly.

The ten U.S. projects, including Elizabeth River Tunnels, SH 130 Segments 5-6, Central 70, the Purple Line, and I-595, showed significant variation in their ADR structures. Some projects included DRB provisions, while others did not, and these provisions varied widely: some required standing boards from the start; others allowed ad hoc meetings only upon formal dispute filing. Mediation was sometimes mandatory, other times optional. In some areas, statutory restrictions on binding arbitration for public entities limited final resolution options, making litigation the last resort. Project-specific ADR innovations, like Texas's State Office of Administrative Hearings (SOAH) and the executive director review process, demonstrated how state public procurement laws shaped ADR approaches.

The ten Canadian projects, including the Ontario Line RSOM, Southwest Calgary Ring Road, Hazel McCallion Line, Port Mann/Highway 1, and the Regina Bypass, demonstrated a more uniform architectural approach, mainly due to the prescriptive standard-form agreements issued by Infrastructure Ontario, Infrastructure BC, and Partnerships Saskatchewan. These agreements typically outline a three- or four-step escalation process (negotiation, independent expert determination or DRB, arbitration) with specific timeframes at each stage. Canadian contracts generally offer greater procedural clarity and explicitly provide for third-party experts, such as independent certifiers, expert appointees who make binding decisions on milestone, completion, or performance questions, a mechanism largely absent in U.S. contracts.

The cross-jurisdictional synthesis led to the initial TNA-HADR (Trans-North American Hybrid ADR) framework, blending the adaptability of U.S. practices with the standardization of Canadian provincial models. This framework was subsequently used as the basis for validation and refinement in Phase 3.

8.2.3 Phase 3 — Expert Interviews

The thematic analysis of sixteen expert interviews identified ten themes from thirty codes, validating the initial framework and leading to important substantive modifications, which represent the main intellectual contribution of this phase.

The key insight was viewing Dispute Review Boards as tools for preventing disputes rather than resolving them after they arise. Practitioners consistently noted that the main benefit of ongoing DRB oversight is the anticipatory bilateral resolution, an informal agreement reached in the weeks preceding a formal meeting, because neither side wants to prolong the issues log. This insight has direct implications for design: including a DRB clause that activates only upon a formal dispute notice fails to harness this value. The Step 0 element in the updated framework formalizes this idea as an ongoing contractual obligation.

The second key finding among the interviewees was the almost universal support for senior executive escalation as the most important ADR level, rated highest across all professional roles (average 4.9 out of 5). Practitioners cited three structural reasons: executives hold decision-making power not available at the project level, they have broader visibility over the entire commercial relationship that project staff lack, and their distance from the specific dispute events makes disputes less personal, often resolving interpersonal entanglements. This result also led to a specific drafting suggestion: the effectiveness of this tier depends on three contractual elements that many existing P3 contracts lack: genuine decision-making authority, neutrality with respect to the underlying events, and a fixed, non-extendable meeting deadline.

The third key finding reinforced the practitioner-observed U.S. jurisdictional fragmentation noted in Phase 2, highlighting state-specific statutory limits on arbitration and the lack of a federal ADR standard as main causes of inconsistency. The fourth key finding revealed two structural gaps: flow-down ADR provisions at the concessionaire-to-design-builder interface and the lack of

operations-phase ADR mechanisms in most DBFOM contracts. These gaps are not addressed in existing literature or typical contractual practices.

8.3 Research Questions Answered

Table 34 outlines how each of the three research questions was addressed throughout the three phases of the study.

Table 51 Research questions and answers

Research question	Evidence source	Answer in brief
RQ1: How has ADR been used in North American P3s over the past 30 years? What best practices and challenges emerge?	Systematic literature review (75 articles, 1990–2023); case study analysis (20 DBFOM projects)	ADR use in P3 and construction contracts has grown steadily since the 1987 AIA A201 update introduced arbitration as a standard clause. Mediation, DRBs, and multi-tiered sequences have expanded since 2000. Best practices include early triggered DRBs, optional mediation with qualified neutrals, and arbitration as the preferred terminal step. Key challenges include inconsistent clause drafting, variable DRB constitutions, and the absence of a unified continental standard.
RQ2: How do ADR clauses differ between U.S. and Canadian P3 contracts? What explains those differences?	Cross-case analysis of 10 U.S. and 10 Canadian DBFOM contracts	Canadian provincial frameworks produce standardized, prescriptive multi-tier ADR sequences with predictable timelines, while U.S. contracts reflect state-by-state fragmentation in DRB use, mediation design, and terminal forum. Five drivers explain the divergence. First, institutional architecture: Canada procures P3s as a program through dedicated provincial agencies (Infrastructure Ontario, Infrastructure BC, SaskBuilds, Alberta Transportation) whose standard-form templates propagate uniform ADR clauses, whereas U.S. authority is delegated to individual state DOTs procuring episodically under state-specific enabling acts. Second, statutory and constitutional constraints: sovereign-immunity and procurement statutes bar binding arbitration for public entities in states such as Virginia and Florida, compelling court-terminal designs, while Canadian provinces face no equivalent barrier. Third, legal-culture inheritance: Canada's statutory adjudication (Ontario, Saskatchewan) transplants the UK's 1996 construction adjudication regime, and its Independent Certifier descends from the Commonwealth certifying-Engineer tradition — channels to which U.S. practice was never connected. Fourth, accountability norms: U.S. open-records regimes and expectations of public resolution favor courts; Canadian delivery agencies operate comfortably within confidential arbitration. Fifth, financing structure: repeat Canadian project-finance lenders drove fast, binding-unless-arbitrated milestone determinations, a standardizing pressure absent from episodic, heterogeneously financed U.S. deals. Institutional centralization is the transmission mechanism through which the other drivers operate — a finding that grounds the policy recommendation for U.S. federal model-clause guidance.
RQ3: How can these findings inform a unified multi-tier ADR framework? How do experts validate and refine it?	16 semi-structured expert interviews; thematic analysis (10 themes, 30 codes)	The case study findings produced a preliminary TNA-HADR framework. Expert interviews validated its core multi-tiered logic and generated eight practice-grounded refinements. The refined framework (Steps 0 through 5) reframes the DRB as a dispute prevention instrument, elevates senior executive escalation as the most critical tier, makes mediation optional with a fixed acceptance window, and includes jurisdiction-adaptive language at the final tier. Flow-down provisions and an operations-phase ADR annex address structural gaps identified in the interview data.

Note. Each research question was addressed by evidence from multiple phases. Phase 1 established the conceptual and historical landscape; Phase 2 provided empirical clause-level evidence; Phase 3 provided practitioner validation and refinement. The three phases are complementary rather than sequential in their contribution to each research question.

8.4 The Refined Multi-Tier ADR Framework: What It Is and What It Does

The central deliverable of this dissertation is the refined six-tier ADR framework (Steps 0 through 5), presented in the preceding chapter. The framework synthesizes all three evidence streams: the conceptual landscape established by the SLR, the comparative clause structures documented in the case study, and the practitioner validation and refinement from the expert interviews. It is designed for adoption in DBFOM concession agreements and in the design-build subcontracts that flow from them.

The framework introduces five key improvements over existing ADR provisions found in the Phase 2 P3 contracts. First, it emphasizes dispute prevention as a primary design goal by establishing Step 0, where proactive monitoring is a contractual duty rather than optional. Second, it clearly defines the senior executive level with specific authority, non-involvement conditions, and fixed timelines, areas where previous contracts often fell short. Third, it reorganizes the sequence so that mediation follows the DRB recommendation, allowing parties to benefit from an expert assessment before engaging in facilitated negotiations. Fourth, it incorporates flexible jurisdiction-specific language at Step 5 to address legal restrictions on arbitration for public entities across states without creating multiple clause versions. Fifth, it fills two structural gaps, flow-down provisions and the operations-phase annex, which none of the Phase 2 contracts adequately addressed.

The framework is designed to be modular by nature. It does not mandate a single ADR architecture for all DBFOM projects. Instead, it offers a set of structured design principles and model provisions that drafters can customize to fit their project's legal, institutional, and relational context.

Three key elements—Step 0 as a mandatory obligation, Step 2 with clear authority and non-involvement criteria, and Step 5 with jurisdiction-specific language—are considered essential and should be included in every implementation.

8.5 Contributions to Knowledge and Practice

This dissertation makes six contributions to the scholarly and professional literatures, summarized in Table 35.

Table 52 Summary of scholarly and practical contributions

Contribution type	Contribution
Empirical	First systematic comparison of ADR clause structures across 20 DBFOM P3 contracts in the U.S. and Canada, revealing the institutional and legislative origins of the jurisdictional gap between the two countries.
Conceptual	In the DBFOM P3 context, this study provides an empirical basis for rethinking Dispute Review Boards. Originally rooted in their U.S. role as quasi-adjudicative bodies making hearings and recommendations (from the mid-1970s), they have evolved into dispute-avoidance tools. This shift was institutionally recognized between 1996 and 2017 with the founding of DRBF and FIDIC's 2017 Dispute Avoidance/Adjudication Board, though it is not yet reflected in North American P3 literature or contract language. The study links the prevention mechanism—an anticipatory, bilateral resolution driven by ongoing DRB oversight—to expert practitioner insights and translates this into concrete contract design criteria.
Empirical	Identification of senior executive escalation as the most critical ADR tier across all professional roles, and documentation of the specific drafting omissions that most frequently undermine its effectiveness.
Methodological	Mixed-methods research design integrating systematic literature review, documentary case study, and qualitative thematic analysis — producing a validated, practice-grounded output from three complementary evidence bases.
Practical	The refined six-tier ADR framework (Steps 0–5), incorporating an operations-phase ADR annex, flow-down provisions for the design-build subcontract, and jurisdiction-adaptive final-tier language for immediate adoption in DBFOM concession agreements.
Policy	Identification of the U.S. federal ADR standardization gap and a targeted policy recommendation for FHWA and FTA to issue model ADR clause language as guidance accompanying P3 program support materials.

Among these insights, redefining DRBs as tools for dispute prevention stands out as the most theoretically impactful, as it shifts the understanding of the purpose behind ADR clauses. Traditionally, both academic and practical approaches have viewed ADR clauses merely as procedures for resolving disputes, steps parties follow after an issue arises. However, this

dissertation presents a more comprehensive view: ADR clauses as tools for dispute governance, primarily influencing party behavior throughout the concession lifecycle before any dispute develops into a formal claim. This new perspective leads to important design considerations, affecting the drafting of DRB provisions, the specification of Step 0, and the timing of senior executive involvement, all of which are integrated into the updated framework.

8.6 Limitations

This study recognizes four limitations that should be considered when interpreting its results and planning future research.

First, the case study and expert interview phases focus solely on North America. Although the refined framework aligns with international ADR standards like FIDIC, the World Bank's Procurement Framework, and the DRBF model provisions, its specific clauses and institutional references, especially the jurisdiction-specific Step 5 provisions and DRB design elements, are tailored to the North American legal environment. Implementation in other regions should be preceded by a legal review of local laws and institutional practices.

Second, the expert interview sample, while purposively designed to represent the entire stakeholder spectrum of a P3 concession, but it tends to lean toward private-sector and neutral roles. Of the sixteen participants, eleven mainly serve private-sector or neutral functions, while perspectives from public-sector owners are less represented, especially for mid-tier agencies like state DOTs and transit authorities that constitute the largest part of the U.S. P3 owner market. Future research that explicitly includes public agency in-house counsel and procurement officials would help supplement this study's findings.

Third, the operations-phase ADR annex, while conceptually justified and empirically grounded in the accounts of three participants, has a thinner evidentiary base than the construction-phase tiers. None of the interview participants could speak in detail about what a well-designed

operations-phase provision should contain, because the practice is not yet mature enough to have generated a body of expert experience. The annex is presented as a design direction supported by structural analysis rather than a fully validated prescription.

Fourth, the case study phase, although the most empirically grounded part of the research, is restricted to contracts with publicly accessible ADR provisions. The case study results reflect only what is publicly visible in these contracts, not necessarily the complete extent of the active ADR arrangements.

Fifth, using the DBFOM model as the inclusion criterion intentionally focuses on the most integrated and long-term concession model, emphasizing dispute-resolution provisions most relevant here. This introduces selectivity, as all cases involve full DBFOM risk transfer, representing complex, heavily financed concessions rather than a broad range of public-private partnerships or infrastructure types. The sample primarily includes large, high-value highway and transit projects in North America, underrepresenting smaller projects and sectors such as social infrastructure, water, or vertical assets. Due to the limited number of mature DBFOM concessions, dispute evidence during operations is scarce, limiting empirical insights into dispute provisions. The sample's homogeneity highlights finance and operations disputes, potentially skewing the analysis. While valid in its scope, the framework's generalizability remains limited. More extensive research across diverse delivery models, project sizes, and sectors is necessary to assess its broader applicability.

8.7 Directions for Future Research

This research outlines several avenues for future scholarly exploration, each addressing a gap or limitation identified during the study.

First, the operations-phase ADR gap identified by expert interviews needs targeted research. The initial North American DBFOM P3S projects, such as SH 130 Segments 5-6, Southwest Calgary Ring Road, and I-595, are now in or entering their operational phases. Analyzing their dispute profiles,

interviewing contract managers and monitoring officers, and building the empirical foundation that is currently missing from the current operations-phase annex would strengthen the annex.

Second, the gap in flow-down provisions requires further investigation at the design-build subcontract level. This dissertation reviewed concession agreements, but the corresponding design-build subcontracts for the same projects were not publicly accessible. Conducting a focused study on ADR provisions in design-build subcontracts, the part of the P3 contract chain most prone to construction disputes, would significantly enhance our understanding of how and where ADR protections fail in real-world scenarios.

Third, the question of U.S. federal standardization requires policy research. This dissertation suggests that FHWA and FTA should provide guidance on model ADR clauses as part of their P3 program support materials. Conducting a policy analysis of the legal and institutional processes involved in developing, issuing, and adopting this guidance, by referencing existing FHWA model contract programs, would generate the necessary translational research to turn this recommendation from a theoretical idea into practical policy.

Fourth, the bimodal dispute-frequency pattern identified by P14 (projects with either zero or one formal DRB dispute, or Multiple) warrants quantitative investigation. If dispute frequency in P3 projects is genuinely bimodal rather than continuously distributed, the determinants of which regime a project enters have disproportionate practical significance. A longitudinal analysis of project characteristics (contract structure, DRB constitution timing, early partnering arrangements, owner experience) and dispute outcomes across a large sample of completed P3 projects would test this pattern and identify its predictors.

Fifth, the expanding field of online dispute resolution (ODR), recognized in the SLR as the newest frontier in ADR research, has not yet been thoroughly examined within the P3 context. As AI-enabled ODR platforms evolve to manage more complex technical disputes, exploring their use in

construction and operations-phase P3 disputes becomes increasingly important. P3 disputes are characterized by long duration, involvement of multiple parties, technical complexity, confidentiality needs, and jurisdictional differences, which pose unique design challenges and opportunities for ODR system developers that the current literature has not fully explored.

8.8 Closing Statement

Disputes in public-private partnership (PPP) infrastructure concessions are not anomalies to be addressed after they occur; rather, they are inherent aspects of the contractual framework. This framework involves long-term commitments, shared risks, and considerable financial interdependence among parties whose interests may not fully align. The core issue is not if disputes will happen, but whether the contractual and institutional systems in place are structured effectively enough to handle them swiftly, equitably, and without causing lasting harm to the partnership crucial for delivering public infrastructure.

The framework will not prevent disputes. Nothing will. But a well-designed ADR architecture, one that activates before disputes harden, escalates through tiers calibrated to the specific authority and expertise needed at each stage, and terminates in a binding process suited to the jurisdictional context of the project, can prevent disputes from becoming litigation, prevent litigation from consuming the project, and preserve the working relationship on which the success of a multi-decade infrastructure partnership ultimately depends. That is the purpose the framework is designed to serve, and, on the evidence assembled here, it is within the reach of practitioners who are willing to invest in the quality of the contracts they draft.

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Appendix A – Interview Questions

Interviewer Notes – Time Management and Skip Logic

- Target duration: 45 minutes (you can complete in ~35 minutes by prioritizing the structured ratings and time-boxing probes).
- Capture one concrete example total (success OR failure of ADR) unless a brief clarifying example is needed.
- Time-box open probes to 1–2 minutes each; move on once you have the key point.
- Use skip logic: if the respondent selects N/A or indicates a mechanism is not used in their context, skip the related probe(s) and proceed to the next mechanism.

Section 0 – Opening & Consent

1. Intro/context

- “I’ve sent you a brief summary of my study and the proposed ADR framework in advance. Do you have any questions before we begin?”

2. Consent

- “Do I have your permission to record this interview and use anonymized quotations in my dissertation and related publications?”

Section 1 – Participant Background (Mostly Structured)

1. Current role (Structured)

- “Which of the following best describes your primary professional role in P3/DBFOM projects?”
 - ☐ Public sector owner / granting authority
 - ☐ Owner’s advisor/transaction advisor
 - ☐ Private concessionaire/project company
 - ☐ Lender/financier
 - ☐ Dispute board member/adjudicator
 - ☐ Mediator/arbitrator/judge
 - ☐ Outside counsel
 - ☐ Technical consultant (design, engineering, scheduling, etc.)
 - ☐ Other (please specify)

2. Years of experience (Structured)

- “How many years of experience do you have working on P3 / DBFOM / long-term infrastructure concessions?”
☐ <5 years ☐ 5–10 ☐ 11–20 ☐ >20

3. Jurisdictions (Structured)

- In which jurisdictions have you primarily worked on P3 / DBFOM projects? (Check all that apply.)
 - ☐ U.S. – Federal
 - ☐ U.S. – State / local (specify main states)
 - ☐ Canada – Federal
 - ☐ Canada – Provincial (specify provinces)

- ☐ Europe (specify countries)
- ☐ Other (specify)

4. **Dispute-related experience** (Semi-Structured)

- “Can you briefly describe your involvement with disputes or dispute resolution on these projects (e.g., negotiation, DRB, mediation, arbitration, litigation)?”

Section 2 – Validating the Problem Statement (Structured + Semi-Structured)

1. Frequency of disputes (Structured)

“On a scale of 1–5, how frequently do **material disputes** arise in DBFOM/P3 projects you’ve seen?”

- 1 = Very rarely, 5 = Very frequently

2. When do disputes generally arise?

☐ Design ☐ Construction ☐ Operation

3. What are the **general topics** of **disputes**?

☐ Construction-related ☐ Operation-related ☐ Finance-related ☐
Labor-related ☐ Force majeure risks ☐ Other (specify)

4. Even with risk transfer to the project company, disputes still arise in DBFOM/P3 projects. In your experience, what are the most common reasons disputes arise?

5. Impact of disputes (Structured)

“On a scale of 1–5, how disruptive are these disputes to project performance (time, cost, relationships, service levels)?”

6. Importance of ADR (Structured)

“On a scale of 1–5, how important are **contractual ADR mechanisms** (e.g., tiered negotiation, DRB, mediation, arbitration) in managing these disputes effectively?”

7. What are the **general ADR structures** used in P3s?

8. Open probe (Semi-Structured)

“Can you share one example where the contractual dispute resolution mechanism either helped or failed to manage a significant dispute?”

9. Suitability of multi-tier ADR (Structured)

“To what extent do you agree with the statement:

‘Multi-tier ADR processes (negotiation → senior executive review → DRB/adjudication → arbitration) are generally more suitable for DBFOM P3s than “single-shot” litigation or arbitration alone.’”

- 1 = Strongly disagree ... 5 = Strongly agree

10. **Probe** (Semi-Structured)

“What factors most influence your view on multi-tier ADR in long-term P3s?”

Section 3 – Validating Case Study Findings (Structured + Semi-Structured)

3.1 Overall Alignment

1. **Alignment with practice** (Structured)

“Based on the summary you reviewed, to what extent do the case study findings reflect what you observe in actual DBFOM/P3 projects in your jurisdiction?”

- 1 = Not at all, 5 = Very closely

2. **Probe** (Semi-Structured)

“Which aspects of the case study findings felt most accurate or familiar to you?”

“Were there any findings that surprised you or did not align with your experience?”

3.2 Specific Elements

3. **Early-stage resolution tiers** (Structured)

“To what extent do you agree:

‘Early tiers of negotiation and senior leadership involvement (before formal adjudication) are critical to controlling dispute escalation in DBFOM P3s.’”

4. **Probe** (Semi-Structured)

“In your experience, what makes early resolution tiers effective or ineffective?”

5. **Role of Dispute Review Boards/adjudication** (Structured)

“In your view, how effective are Dispute Review Boards (or equivalent adjudication boards) at resolving disputes **during construction and early operations**?”

- 1 = Not effective, 5 = Very effective, N/A = Not used

Interviewer note: If N/A (Not used), skip the DRB probe and proceed to “Use of mediation.”

6. **Probe** (Semi-Structured)

“Can you describe conditions under which DRBs or similar bodies work well—and when they tend to fail?”

7. **Use of mediation** (Structured)

“In the projects you know, how commonly is **mediation** used as a distinct step between adjudication and arbitration/litigation?”

Interviewer note: If “Rarely / never,” ask the mediation probe briefly (<=1 minute) and then proceed to “Arbitration vs courts.”

- ☐ Rarely / never ☐ Occasionally ☐ Often ☐ Almost always

8. **Probe** (Semi-Structured)

“Why do you think mediation is (or is not) used, and what value does it add or fail to add in P3s?”

9. **Arbitration vs courts** (Structured)

“On a scale of 1–5, how suitable is **arbitration** as a final forum for P3 disputes compared to courts in your jurisdiction?”

10. **Probe** (Semi-Structured)

“What advantages or drawbacks have you observed with arbitration in large P3 disputes?”

Section 4 – Validating the Proposed ADR Framework

4.1 Overall Assessment

1. **Overall usefulness** (Structured)

“On a scale of 1–5, how useful do you find the proposed ADR framework as a guide for structuring dispute resolution in DBFOM / long-term P3s?”

2. **Overall clarity** (Structured)

“On a scale of 1–5, how clear and understandable is the framework as presented?”

3. **Probe – first reaction** (Semi-Structured)

“What was your initial reaction when you reviewed the framework? Did anything immediately ‘ring true’ or raise concerns?”

4.2 Structure & Logic of the Tiers

4. Appropriateness of tier sequence (Structured)

“To what extent do you agree with the **sequence** of tiers proposed in the framework (e.g., project-level negotiation → senior leadership review → technical/commercial boards → mediation → arbitration)?”

5. **Probe** (Semi-Structured)

“If you could reorder or modify the tiers, what would you change and why?”

6. **Differentiation by dispute type** (Structured)

“The framework suggests aligning forums with the **nature of the dispute** (e.g., technical vs commercial vs legal/policy). How appropriate do you find this differentiation?”

7. **Probe** (Semi-Structured)

“In practice, do you find it feasible to distinguish disputes as primarily ‘technical’ or ‘commercial’? How might this work—or not work—contractually?”

4.3 Role of Technical and Commercial Boards

8. **Feasibility of dual boards** (Structured)

“To what extent do you think establishing separate **Technical** and **Commercial** boards (with joint sittings for mixed issues) is feasible in your jurisdiction?”

9. **Expected effectiveness** (Structured)

“On a scale of 1–5, how effective do you think such boards could be in resolving disputes **before** they escalate to arbitration or litigation?”

10. **Probe** (Semi-Structured)

“What benefits and risks do you see in having specialized technical and commercial boards?

–

Composition?

–

Independence?

– Cost and administration?”

4.4 Procedural Features and Time Limits

11. Time-bound procedures (Structured)

“The framework recommends specific, relatively short time limits for each tier (e.g., 10–15 days for negotiation and adjudication, 20–30 days for board determinations). How realistic are these timeframes for major DBFOM P3 disputes in your context?”

- 1 = Not realistic, 5 = Very realistic

12. Default-binding decisions with limited review (Structured)

“To what extent do you agree that **default-binding** decisions (subject only to limited review—e.g., manifest error, ultra vires, procedural unfairness) are appropriate for mid-tier dispute forums in P3s?”

13. Probe (Semi-Structured)

“What concerns, if any, do you have about enforceability, due process, or power imbalances under such a model?”

4.5 Implementation, Barriers, and Adaptation

14. Key implementation barriers (Structured)

“From your perspective, which of the following are the **biggest barriers** to implementing this framework? (Rank or select top 3.)”

- ☐ Legislative/regulatory constraints
- ☐ Political or public accountability concerns
- ☐ Market capacity (availability of qualified board members/neutrals)
- ☐ Transaction costs and complexity
- ☐ Resistance from private sector/lenders

- ☐ Institutional culture/familiarity
- ☐ Other (specify)

15. Contextual fit (Structured)

“How well do you think the proposed framework fits:

- (a) U.S. DBFOM highway and transit P3s?
- (b) Canadian DBFOM highway and transit P3s?”

(Separate 1–5 ratings.)

16. Adaptation suggestions (Semi-Structured)

- “To keep this focused, please identify the top two adaptations that would make the framework more workable in:

- (a) U.S. state-level P3s (top 2)?
- (b) Canadian provincial P3s (top 2)?
- (Optional) (c) Other jurisdictions you know well?”

Study Overview: Validating a Multi-Tier ADR Framework for DBFOM/P3 Projects

1. Background

Long-term Public–Private Partnerships (P3s) and DBFOM contracts are complex, high-value agreements that often lead to disputes during construction and early operations. When disputes escalate to litigation or arbitration, the process can be slow and costly, and it can harm relationships.

Many P3 contracts include multi-tiered dispute resolution mechanisms such as negotiation, dispute boards, mediation, or arbitration. However, these mechanisms are not consistently implemented across jurisdictions. This study analyzes current ADR structures in P3/DBFOM contracts and proposes a clearer, more systematic ADR framework for future projects.

2. What the study has done so far

Case studies of North American P3/DBFOM projects

Several detailed case studies of U.S. and Canadian highway and transit P3s were conducted using publicly available contracts and related documents. The analysis focused on:

1. How dispute-resolution provisions are structured (e.g., the number and type of tiers);
2. How disputes progress through these tiers in practice;
3. How public-law constraints, procurement models, and institutional roles shape ADR design.

3. Key insights so far (high-level)

Across these sources, several patterns emerge:

- **Multi-tier ADR** is common and useful but **varies** by **jurisdiction** and **project**.

- **Canadian P3s**, especially **provincial ones**, use **standardized ADR paths** with early involvement of **independent experts** or **dispute boards**.
- **U.S. P3s** offer more flexibility, reflecting different state laws, but this can cause fragmentation, uncertainty, and reliance on litigation.
- Overall, the U.S. model offers **adaptability** in **complex public-law** settings, while the Canadian approach provides **coherence** and **predictability** in a uniform P3 environment.
- **Global frameworks** favor **early, expert-driven resolution** and **structured, time-limited processes**, though these are **not always** seen in North American P3 contracts.

4. The proposed ADR framework

Drawing on the literature, case studies, and global standards, the study proposes a multi-tier ADR framework for P3/DBFOM projects to:

- Preserve flexibility where needed,
- Provide clearer structure and timelines, and
- Align dispute forums with the nature of each dispute.

The Model: TNA-HADR (Trans-North American Hybrid ADR)

Tier 0 Partnering & Risk Huddles	Standing charter; bi-weekly issues emerged; notes that are not admissible.
Tier 1 Project-Level Negotiation (≤10 business days)	Issue notice + concise merits and impact memo; rolling production of contemporaneous records.
Tier 2	Decision-makers discuss; exchange settlement choices 48 hours in advance.

Senior-Executive Conference (≤10 business days)	
Tier 3 Rapid Adjudication / Referee / IC (10–15 business days)	Use statutory adjudication (ON/SK) for payments or milestones when available; otherwise, rely on a fast-track referee or IC decision. The interim decision is binding and payable, subject to later review or adjustment.
Tier 4 Mediation (7–10 business days)	Automatic unless both parties choose to opt out; mediator with P3 megaproject experience; not admissible caucuses.
Tier 5 Specialized Boards (20–30 business days)	Technical Board (design, schedule, quality) and Commercial Board (entitlements, relief, payment). Decisions are binding unless reviewed within 10–15 days. Joint sittings are permitted for related issues.
Tier 6 One-Shot, Record-Based Review (≤30 business days)	Option A (U.S. admin-forward): tribunal like SOAH with limited grounds. Option B (arbitration-forward): expedited three-arbitrator panel. Option C (court-forward): exclusive venue with review limited to facial error, jurisdiction, or due process.

The goal is not to prescribe a single “one-size-fits-all” solution, but to offer a structured framework that can be tailored to specific jurisdictions and sectors.

5. Purpose of your interview

The purpose of the interview is to **validate and refine** both:

1. The study's **findings so far** (how disputes and ADR mechanisms actually function in P3/DBFOM projects), and
2. The **proposed ADR framework** (its clarity, usefulness, feasibility, and fairness).

During the discussion, you'll be asked to:

- Comment on whether the findings reflect your experience.
- Assess specific elements of the proposed framework (tiers, boards, time limits, etc.).
- Identify any important issues that are missing; and
- Suggest adaptations that would make the framework more workable in your jurisdiction or sector.

Your insights will be anonymized and used to strengthen the final framework and its recommendations for future P3/DBFOM contracts.

